MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. XXVII

Harold N. Moldenke

VERBENA TENUISECTA Briq.

Additional bibliography: Moldenke, Phytologia 11: 181 (1964) and 11: 243, 246, 265, 268, 270—274, 278, & 280—287. 1965.

It should be noted here that the V. dissecta of Poeppig and of Walpers is V. sulphurea D. Don; that of Schauer is V. berterii (Meisn.) Schau.; that of Sprengel is V. dissecta Willd., a valid species.

Ten hybrids involving V. tenuisecta are known — that with V. canadensis (L.) Britton is known as xV. wingei Moldenke, with V. dissecta Willd. is xV. nequam Moldenke, with xV. hybrida Voss is xV. teasii Moldenke, with V. incisa Hook. is xV. trinitensis Moldenke, with V. megapotamica Spreng. is xV. transitoria Moldenke, with V. perakii (Covas & Schnack) Moldenke is xV. nisa Moldenke, with V. peruviana (L.) Britton is xV. solbrigii Moldenke, with V. phlogiflora Cham. is xV. dissoluta Moldenke, with V. racemosa Eggert is xV. kondai Moldenke, and with V. santiaguensis (Covas & Schnack) Moldenke is xV. covasii Moldenke. The so-called "Verbena chamaedryfolia x tenuisecta" Briq., however, is V. calliantha Briq.

Common and vernacular names recorded for V. tenuisecta include "amor de hombre", "amór de hombre", "camaradinha", "common moss vervain", "formosa sem dote", "fumaria", "hierba del incordio", "jurupeba", "lazo de amor", "margarita", "margarita morada", "moss verbena", "perajil", "Rouen", "sandialahuén", "sandia lahuen", "small-flowered verbena", "verbena", "verbena americana", "verbena azul", "verbenna", "vervain", "verveine élégante", "verveine erinoides Violette", "wild verbena", "yerba del incordio", and "yerba meona".

Material of V. tenuisecta has been misidentified and distributed in herbaria under such names as V. ambrosiaefolia Rydb., V. aristigera S. Moore, V. aubletia L., V. bipinnatifida Nutt., V. bipinnatifidum Nutt., V. canadensis (L.) Britton, V. dissecta Willd., V. drummondii (Lindl.) Bart., V. drummondii (Lindl.) Baxt., V. erinoides Lam., V. erinoides var. laciniata (L.) Briq., V. glandularia Jürgensen, V. incisa Hook., V. mahanettii Hort., V. mendocina R. A. Phil., V. microphylla H.B.K., V. officinalis L., V. pulchella Sweet, V. pumila Rydb., V. tampensis Nash, V. tenera Spreng., V. tenera var. maonetti Regel, V. tenera var. maonettii Hort., Verbenna drummondii Baxt., Linaria sp., and Phlox sp.

On the other hand, the Boffa 25, Herter 181 1/2, and H. M. Smith 5 & 140, distributed as V. tenuisecta, are actually V. tenera Spreng., while Ahles 54307a and Davis & Davis 11624 are V. tenuisecta var.

alba Moldenke.

Briquet (1904) gives the following distinguishing notes about V. tenuisecta: "Cette élégante espèce est voisine des V. tenera Spreng. et V. dissecta Willd. Elle se distingue du V. tenera par son port plus robuste: ses feuilles plus grandes, plus divisées, à divisions plus étroites: son calice plus long, entièrement canescent (et non pas poilu-cilie sur les nervures, glabrescent sur les champs interneuraux), à dents plus longues: ses bractées finement pubescentes extérieurement et très longuement ciliées sur les marges. -- Elle se sépare encore plus facilement du V. dissecta par l'inflorescence qui dans cette derniere espèce, est formée de capitules rassenblés en panicule. En outre, le V. dissecta ne possède pas un calice strigoso-canescent, mais il est pourvu, sur les cotes seulement, de poils recourvés vers le sommet, tandis que les champs interneuraux sont glabres ou presque glabres. D'ailleurs, la forme des dents calicinales et l'ampleur des divisions foliaires lui donnent un caractère assez différent. Le V. dissecta de M. Morong (l. c. exsicc. n. 219) appartient exactement au V. tenuisecta et n'a pas de rapports étroits avec le V. dissecta Spreng."

Vilmorin-Andrieux gives these culture suggestions: "Semer: 1° en août-septembre, en pépinière, en pots ou en terrines; repiquer en pots; hiverner sous chassis ou en serre tempérée au plus près de la lumiere; mettre en place en fin avril-mai. -- 2° en mart-avril sur couche; repiquer en pépinière ou en pots, sur couche, mettre en place en mai. -- 3° en avril-mai en place ou en pépinière. Fl. de juin-juillet en octobre." In the New York Herald Tribune (1952) the following is said: "Most gardeners have learned from experience that few annuals fit perfectly into the rock garden. Most of those that like the specific conditions must be sown every spring, unless the seedlings can be transferred to the rock garden from a special seedbed or the cold frame. However, there is one annual that does better there than anywhere else. It is Verbena erinoides. Once sown the gardener will find new plants coming up year after year if the plants are permitted to seed. It usually is late May or early June before the seedlings show up, which is an advantage because at that time the spring bloomers have finished. Verbena erinoides blooms continuously until frost and the bright blue flowers are a real asset at a time when rock garden flowers are scarce."

Collector differ greatly in their description of the flower-color of V. tenuisecta. Possibly several genuine color-forms are represented, but more probably the apparent differences are due to differing color interpretations on the part of the collectors and to the age of the flowers observed. They are described most often as "purple", as on R. M. Aguilar 843, Barrionuevo s.n., Chrysler & Johnson 350, Dress, Moore, & Lawrence 633, Eyerdam, Beetle, & Grondona 3443, Greco s.n., J. Gutiérrez 89, C. L. Lundell 10937, Lundell & Lundell 10550, Peredo s.n., Ruiz Huidobro

3147, Sota 24, Stratton 6125, and Tharp, Turner, & Johnston 54849, or as "violet", as on Arechavaleta 23, L. H. Bailey s.n. [July 19, 1924], Berro 133, 2991, 6022, & 7225, Grüner 378, Ibarrola 3218, Jörgensen 3771, Osten 8064, 9013, & 13107, Pancho 1669, Rojas 2536, Ruiz Huidobro 3359, 3637, & 5417, G. J. Schwarz 1885, 2260, 2502, 3040 (in part), 3086, & 3232, Traverse 981 & 1383, and Valeur 448. They are called "deep-purple" on Lundell & Lundell 10511, "pink-purple to bluish-purple" on Cronquist 4875; "violet-purple" on L. H. Bailey s.n. [Aug. 4, 1922] and J. West 8470; "brilliant rose-purple" on L. H. Bailey s.n. [Aug. 7, 1925]; "purple with a minute white eye" on Lundell & Lundell 11065; "purple-lilac" on Montes 1825; "bluish-purple" on R. M. Aguilar 409; "purplish-blue" on Montes 2278; "bright pink-purple" on Cronquist 4953; "bright-purple" on Janish & Janish 264; "magenta-purple" on Shinners 14012; "rose-purple" on B. E. Smith 1459; "bluish to reddish-purple" on Shinners 25811; "lilac" on Bailey & Bailey 257, Bertoni 1970, Britton, Britton, & Boynton 8712, Cabrera 12360, Ruiz Leal 14887, and Terribile 633 & 671; "bright rose-lilac" on L. H. Bailey s.n. [Aug. 10, 1924]; "lilac to pale-violet" on Herter 50887; "dark-lilac" on Ruiz Leal 14891; "blue-lilac" on Wall & Sparre s.n.; "pale-violet" on Arechavaleta 23 bis; "violet, drying blue" on C. F. Smith 2403; "Parma violet mauve" on Sandeman 4824; "light-violet" on Ekman H.12615; "blue-violet" on Wall & Sparre s.n.; "rose" on Ruiz Leal 14247, D. Rodriguez 578, and G. J. Schwarz 1177 & 1251; "vivid-rose" on Jörgensen 2465; "pink" on Correll, Johnston, & Edwin 22229; "magenta" on Craig & Craig 3392; "mauve turning blue in drying" on Meeuse 9143; "lavender" on Correll, Johnston, & Edwin 22258; "deep-lavender" on D. S. Correll 15325; "blue" on Cabrera 3244, Ibarrola 1283, T. Meyer 139 & 11339, H. N. Moldenke 1083, 1084a, & 18237, Montes 1079, Ruiz Huidobro 3742 & 3769, and Singh 163; and "deep-blue" on R. Jones 102, while on Gillespie 365 the flowers are described as "deep-blue to purple, exterior part of corolla white between flange and tube of corolla."

For those students interested in plotting the spread of the species as an introduction I give herewith the earliest dates known to me at present of its having been collected in various areas: North Carolina: Columbus, Cumberland, Duplin, Hope, Robeson, & Scotland Counties -- 1958. South Carolina: Lexington County -- 1936; Charleston County -- 1941; Dillon County -- 1949; Allendale, Bamberg, Barnwell, Florence, Kershaw, Lee, Orangeburg, & Richland Counties -- 1962. Georgia: Clarke & Dougherty Counties -- 1909; Toombs County -- 1914; Tift County -- 1926; Bibb & Turner Counties -- 1929; Colquitt & Muscogee Counties -- 1930; Mitchell County -- 1933; Crisp County -- 1937; Ware County -- 1940; Baker, Clinch, & Echols Counties -- 1941; Ben Hill County -- 1946; Effingham & Laurens Counties -- 1947; Tatnall County -- 1948; Bacon, Bleckley, Brooks,

Burke, Decatur, Dodge, Grady, Hancock, Jeff Davis, Jefferson, Lanier, Lowndes, Screven, Telfair, Thomas, Twiggs, & Washington Counties -- 1962. Florida: Baker County -- 1918; Dade & Marion Counties -- 1921; Alachua & Gulf Counties -- 1924; Gadsden County -- 1925; Bay & Jackson Counties -- 1926; Leon County -- 1936; Washington County -- 1937; Franklin County -- 1939; Hamilton County -- 1940; Holmes County -- 1954; Calhoun & Liberty Counties -- 1962. Alabama: Mobile County -- 1893; Etowah County -- 1918; Autauga County -- 1927; Butler County -- 1931; Escambia County -- 1932. Mississippi: Harrison County -- 1925; Scott County -- 1927; Pearl River County -- 1940; Jones County -- 1955. Arkansas: Calhoun County -- 1941. Louisiana: Orleans Parish -- 1932; Lincoln Parish -- 1950; Natchitoches Parish -- 1956; Beauregard, Bienville, Bossier, Claiborne, Jackson, Vernon, & Webster Parishes -- 1963. Texas: Harris County -- 1920; Orange County -- 1931; Jefferson County -- 1934; Newton County -- 1939; Polk County -- 1940; Jasper County -- 1941; Angelina & Galveston Counties -- 1942; Nacogdoches County -- 1944; Hardin County -- 1947; Trinity & Waller Counties -- 1948; Sabine County -- 1959. Arizona: Pima County -- 1949. California: Los Angeles County -- 1924; Ventura County -- 1944; Santa Barbara County -- 1950. Puerto Rico -- 1914. Dominican Republic -- 1929.

Troncoso (1937) reports that the species is cultivated in Buenos Aires. Briquet (1904) cites Regnell A.3643. Martínez Crovetto & Piccinini (1951) cite Martínez-Crovetto 5527 from Corrientes and describe the species as "Hemicriptófita radicante con flores lilacinas, frecuente en la región. Crece también en los palmares, pero en ellos es más bien rara." Hoehne (1951) refers to "Moldenke, in 'Misc. Papers', vol. XVII (1940) p. 150 e 'Flora Brasílica', vol. 47: 4, 1, inédito." Ahles & Radford (1959) cite Correll & Blomquist 7341 (H) from Columbus County, North Carolina, and Wilbur 5748 (H) from Scotland County. They also cite Ahles & Hammond 24460 & 24790, Ahles & Ramseur 23705 & 24010, and Ahles & Neuber 25065 as Ahles numbers. They comment that "Small (1933).....gives the range of this species as 'Fla. and Ga. to La.' Moldenke (1949) excludes this species from North Carolina. Fernald (1950) does not include this species. Moldenke (1952) says, 'naturalized from S. C. to Fla. and w. to Mo., Ark., La., Tex. and s. Cal.' In southeastern North Carolina it is becoming very common on the sandy soil of the coastal plain and its showy blossoms are a welcome addition on the weedy roadsides."

In all, 731 herbarium specimens, including the type collections of all the names involved, and 2 mounted photographs have been examined by me.

Citations: QUEBEC: Laprairie Co.: Cléonique-Joseph 4559 (Vi). NORTH CAROLINA: Columbus Co.: C. R. Bell 12733 (Hi--110656, St); A. R. Moldenke 458 (Fg). Cumberland Co.: Ahles & Hammond 24460 (Hi--104403). Duplin Co.: Ahles & Ramseur 24010 (Hi--104402). Hoke Co.: Ahles & Neuber 25065 (Hi--104401). Robeson Co.: Ahles & Ramseur 23705 (Hi--101632); Britt 2281 (Hi--180051). Scotland Co.:

Ahles & Hammond 24790 (Hi--104400). SOUTH CAROLINA: Allendale Co.: C. R. Bell 2614 (Hi--101646); A. R. Moldenke 419 (Fg). Bamberg Co.: Ahles & Haesloop 22108 (Hi--146192); A. R. Moldenke 428 (Fg). Barnwell Co.: A. R. Moldenke 423 (Fg). Berkeley Co.: Ahles & Haesloop 22374 (Hi--101645). Calhoun Co.: Ahles & Bell 10104 (Hi--92869). Charleston Co.: Vanderbilt s.n. [April 10, 1941] (N). Chesterfield Co.: A. E. Radford 12458 (Hi--92871). Clarendon Co.: A. E. Radford 21219 (Hi--101643). Darlington Co.: B. E. Smith 1459 (Hi--26479), 1460 (Hi--26478), 1461 (Hi--26480). Dillon Co.: Ahles & Ramseur 23307 (Hi--101629); Godfrey SC.49027 (N). Dorchester Co.: Ahles & Haesloop 21836 (Hi--146193). Edgefield Co.: A. E. Radford 20371 (Hi--101644). Florence Co.: C. R. Bell 7541 (Hi--101642); A. R. Moldenke 447 (Fg). Georgetown Co.: A. E. Radford 21587 (Hi--101641). Hampton Co.: Ahles & Bell 10592 (Hi--92870). Horry Co.: C. R. Bell 6269 (Hi--101640). Jasper Co.: Ahles & Bell 10443 (Hi--92826). Kershaw Co.: A. R. Moldenke 444 (Fg); A. E. Radford 23704 (Hi--101639). Laurens Co.: C. R. Bell 5561 (Hi--101636). Lee Co.: A. R. Moldenke 437 (Fg); A. E. Radford 20692 (Hi--101638). Lexington Co.: A. R. Moldenke 432 (Fg); A. E. Radford 20425 (Hi--101637); W. H. Rhoades s.n. [Leesville, Aug. 1936] (Bt--61224, N). Marion Co.: C. R. Bell 6322 (Hi--101635). Marlboro Co.: A. E. Radford 12560 (Hi--92827). Newberry Co.: C. R. Bell 9116 (Hi--101634). Orangeburg Co.: Ahles & Haesloop 21500 (Hi--101633); A. R. Moldenke 431 (Fg). Richland Co.: C. R. Bell 16492 (Hi--201129); A. R. Moldenke 440 (Fg). Saluda Co.: A. E. Radford 20654 (Hi--101631). Sumter Co.: O. M. Freeman 56806 (Hi--92828); Holdaway 1 (H--42680). Williamsburg Co.: A. E. Radford 21434 (Hi--101630). GEORGIA: Appling Co.: Pancho 1669 (Ba). Bacon Co.: A. R. Moldenke 345 (Fg). Baker Co.: W. H. Duncan 4077 (N). Barrow Co.: Welch 1438 (Dp). Ben Hill Co.: Esselbaugh s.n. [Fitzgerald, March 23, 1946] (Ur); F. J. Hermann 10104 (N); W. H. Rhoades s.n. [Fitzgerald] (Hs). Bibb Co.: A. R. Moldenke 370 (Fg); W. H. Rhoades s.n. [near Macon, July 1929; H. N. Moldenke 17085] (Bt, N, St). Brooks Co.: D. S. Correll 5549 (Dm, Dp, H--40234); A. R. Moldenke 309 (Fg, Fg). Bleckley Co.: A. R. Moldenke 377 (Fg). Bulloch Co.: A. Baker 20 (Hi--186571); H. Manning 33 (Hi--198332); C. Owens 26 (Hi--186382); Pyron & McVaugh 1364 (Gu--14064); S. Taylor 27 (Hi--198297). Burke Co.: A. R. Moldenke 407 (Fg). Clarke Co.: Eggleston 5104 (N). Clinch Co.: A. R. Moldenke 330 (Fg); P. O. Schallert s.n. [4/29/41] (Du--369013). Colquitt Co.: Kirkpatrick s.n. [Doe Run, 8-14-30] (Ga). Crisp Co.: H. H. Hume s.n. [Cordele, 13 May 1937] (Fl--26626). Decatur Co.: A. R. Moldenke 296 (Fg). Dodge Co.: A. R. Moldenke 365 (Fg). Dougherty Co.: Eggleston 5104 (Cm, Vt, W--586011); Oosting 80 (Bt--

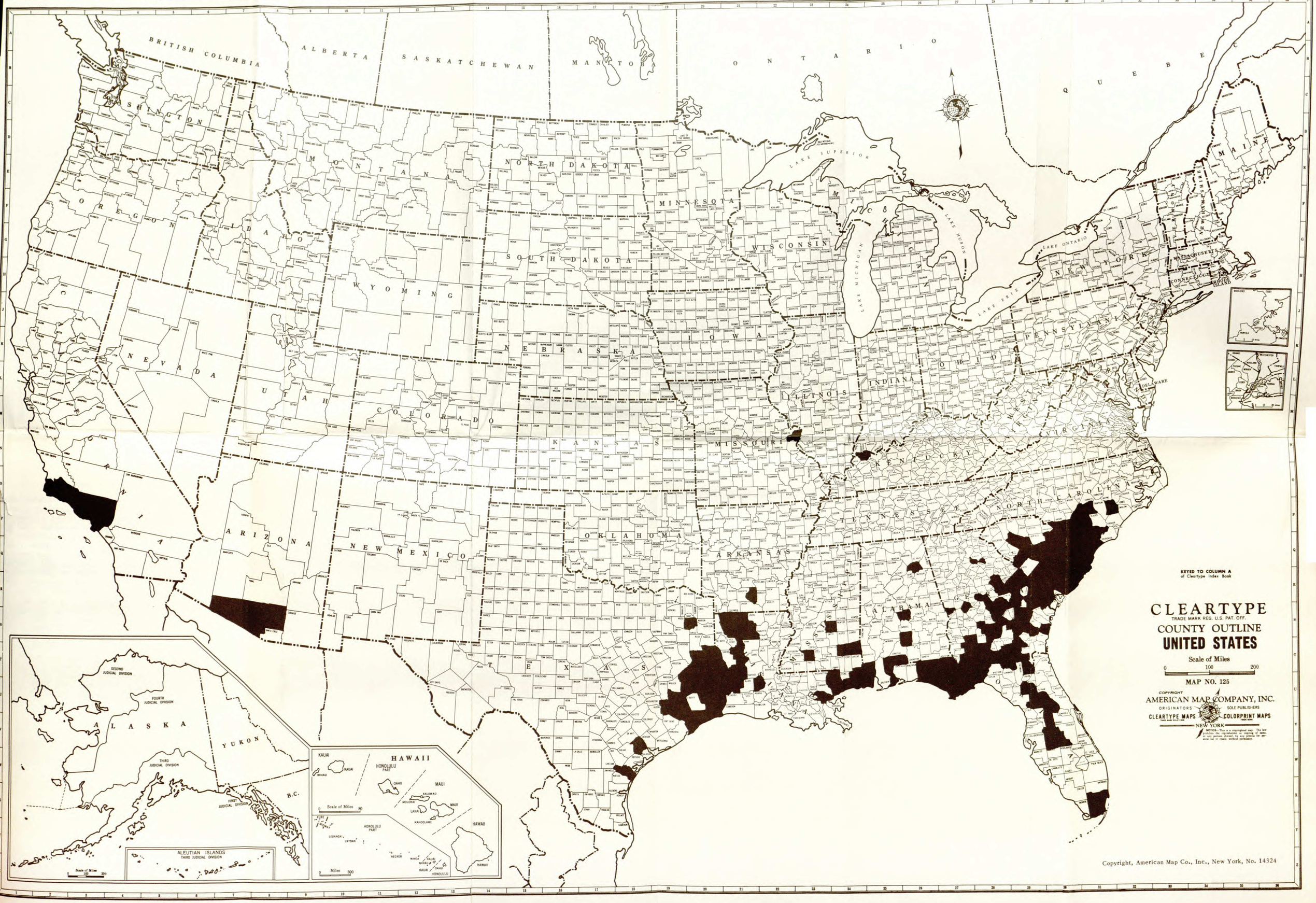
355281, H—1255, Up). Echols Co.: P. O. Schallert s.n. [4/29/41] (Ca—882635, Gg—310859). Effingham Co.: Cronquist 4289 (Gu—28157, N). Emanuel Co.: Craig & Craig 3392 (Po—249594). Evans Co.: Miller & Maguire 1255 (Ua—16571). Grady Co.: A. R. Moldenke 299 (Fg). Hancock Co.: A. R. Moldenke 392 (Fg). Irwin Co.: Pyron & McVaugh 2118 (Gu—16575). Jeff Davis Co.: A. R. Moldenke 353 (Fg). Jefferson Co.: A. R. Moldenke 400 (Fg). Lanier Co.: D. E. Eyles 5702 (Sa); A. R. Moldenke 324 (Fg). Laurens Co.: Cronquist 4875 (Ca—788971, Gu—27814, N, Tl, W—1927215). Lowndes Co.: A. R. Moldenke 315 (Fg). McIntosh Co.: Chrysler & Johnson 350 (Hp, Ru). Mitchell Co.: Bailey & Bailey s.n. [Camilla, Mar. 29, 1933] (Ba). Muscogee Co.: S. F. Evans E.4270 (Up); J. M. Reade s.n. [April 3, 1930] (Gu—E.4270). Richmond Co.: Duke 601 (Hi—112977). Screven Co.: Ahles 54307 (Hi—200786); W. H. Duncan 1241 (Gu—18203); A. R. Moldenke 412 (Fg). Tatnall Co.: Cronquist 4953 (Gu—30565, N, W—1928907). Taylor Co.: Dress, Moore, & Lawrence 633 (Bm, Go). Telfair Co.: A. R. Moldenke 358 (Fg). Thomas Co.: W. H. Duncan 1313 (Gu—18499); A. R. Moldenke 305 (Fg); Oosting 94 (H—40426). Tift Co.: McAtee 3589 (Hi—52015); W. H. Rhoades s.n. [near Tifton, September 1935; H. N. Moldenke 17087] (Au—122769, Br, Bt, Dp, N, St); Van Halfern s.n. [Tifton, 4-20-26] (Ga), s.n. [Tifton, April 1926] (Ga). Toombs Co.: J. S. Harper 470 (N); A. M. Huger s.n. [Vidalia, April 1914] (Io—76638). Treutlen Co.: McKellar 44 (Gu—15514). Turner Co.: W. H. Rhoades s.n. [Ashburn, July 1929; H. N. Moldenke 17084] (Br, Bt, Ml, N, Nd, St). Twiggs Co.: A. R. Moldenke 391 (Fg). Ware Co.: A. R. Moldenke 335 (Fg); P. O. Schallert 251, in part (B, Go, Hi—54952, Je—6976, We), s.n. [8/1/40] (Bt—57984). Washington Co.: A. R. Moldenke 397 (Fg). Wayne Co.: P. O. Schallert 251, in part (Hi—146049, S). FLORIDA: Alachua Co.: Janish & Janish 264 (Du—392746, N); Murrill 111 (W—1846590); Small, DeWinkeler, & Mosier 11178 (N); Watson & Murrill s.n. [High Springs, 4/30/39] (Fl—30165); Weber & West s.n. [Paradise, 6-8-27] (Fl—21105). Baker Co.: L. H. Bailey s.n. [Glen Saint Mary, July 30, 31, 1918] (Ba); H. H. Hume s.n. [Glen St. Mary, Aug. 13, 1928] (Ba). Bay Co.: Davis & Davis 11452 (Hi—115553). Calhoun Co.: A. R. Moldenke 272 (Fg). Dade Co.: Small, Small, & DeWinkeler s.n. [Deering Hammock, Dec. 1921] (N, N). Escambia Co.: Ahles 7120 (Ur); Brinker 313 (I). Franklin Co.: H. C. Beardslee s.n. [Apr. 22, 1939] (Ob—97287). Gadsden Co.: Buswell s.n. [May 1928] (Bu); Exploration Party 1937 s.n. [14 Mar. 1937] (Fl—27328); Kinkaid & West s.n. [Mt. Pleasant, 4-18-30] (Fl—21107); McAtee 3349 (W—1368588); A. R. Moldenke 291 (Fg); O'Neill 551 (I), s.n. [River Junction, Apr. 19, 1925] (W—1241595); Small & Alexander s.n. [Chattahoochee, May

1931] (N, N); Small, Mosier, & Matthaus 12778 (H--82867, We); E. West s.n. [Chattahoochee, 8 Sept. 1931] (Fl--20997). Gulf Co.: Small, DeWinkeler, & Mosier 11225 (N, W--1738770). Hamilton Co.: West & Arnold s.n. [Jasper, 11 Apr. 1940] (Fl--32028). Holmes Co.: E. S. Ford 3551 (W--2230900). Jackson Co.: H. J. Banker 3685, in part (N); A. D. Brubaker 22 (St); Exploration Party 1937 s.n. [15 Mar. 1937] (Fl--27034); Grossman 7 (Fl--21108); H. N. Moldenke 8354 (N). Jefferson Co.: B. L. Wagenknecht 3615 (Lw, Lw). Lake Co.: L. H. Bailey 6812 (Ba). Leon Co.: J. P. Gillespie 365 (Hi--112936); R. K. Godfrey 53039 (N); Hume & West s.n. [Tallahassee, 29 March 1936] (Fl--20999); C. Jackson 184 (Ld); A. R. Moldenke 288 (Fg). Liberty Co.: A. R. Moldenke 277 (Fg). Marion Co.: H. N. Moldenke 1083 (Go, H--5468, N, Ob--68710, S, Up, Ur), 1084a (N, S, Up, Ur). Polk Co.: McFarlin 5775 (Mi). Wakulla Co.: Trott 100 (Ca--95388). Walton Co.: E. G. Hume 32-11 (Fl--2127). Washington Co.: Hodges s.n. [Chipley, April 23, 1937] (Fl-28083); F. H. Sargent s.n. [Careyville, June 20, 1950] (No--23913, Ok, We). County undetermined: McAtee 3590 [State Line] (Hi--52016). ALABAMA: Autauga Co.: R. M. Harper 25 (N, W--1365901). Butler Co.: W. H. Rhoades s.n. [Georgiana, July 1931] (Bt, Bt--29647, N). Escambia Co.: F. S. Blanton s.n. [Canoe, Oct. 25, 1932] (I); Gaines & Gaines 268 (N). Etowah Co.: W. H. Rhoades s.n. [near Ataltala, July 1918] (Ky), s.n. [near Attala] (Hs). MISSISSIPPI: George Co.: Demaree 32831 (Le); Diener 835 (Tl, Ur). Hancock Co.: Diener 865 (Ur). Harrison Co.: Demaree 28400 (N), 29006 (Au--122772, N, Ok, St), 30362 (Au--122771, N); Goodspeed s.n. [Biloxi, Apr. 1925] (Io--117498); R. J. Lemaire 802 (Tl); A. R. Moldenke 254 (Fg). Jones Co.: J. D. Ray 5017 (Hi--199516, N). Lincoln Co.: Webster & Wilbur 3282 (W--2068016). Pearl River Co.: Hummel s.n. [Pearl River, 17.IV.1958] (Go); A. R. Moldenke 250 (Fg); W. H. Rhoades s.n. [Poplarville, Sept. 1940; H. N. Moldenke 17086] (Br, Bt, N, St), s.n. [near Poplarville, Sept. 1940] (N). Scott Co.: W. H. Rhoades s.n. [near Morton, July 1927] (N). Wayne Co.: Cooley & Pease 3111 (Hi--193305). TENNESSEE: Henderson Co.: Sharp, Fairchild, Clebsch, & Clebsch 9298 (O). ARKANSAS: Calhoun Co.: Demaree 22509 (N). LOUISIANA: Beauregard Par.: A. R. Moldenke 708 (S). Bienville Par.: Moldenke & Woods 542 (S). Bossier Par.: Moldenke & Woods 546 (S). Claiborne Par.: Moldenke & Woods 544 (S). Evangeline Par.: Ewan 19365 (Tl). Jackson Par.: Moldenke & Woods 531 (S). Lincoln Par.: Moldenke & Woods 539 (S); B. Williams s.n. [Ruston, March 28, 1950] (Ca--86352, Tl). Natchitoches Par.: L. E. Fox 402 (Fx), 407 (Nc), 408 (Fx); A. R. Moldenke 699 (S); Ware s.n. [June 24, 1956] (S). Orleans Par.: Aydell s.n. [Feb. 1932] (Tl); Hummel s.n. [New Orleans, 17/4/1958] (S). Vernon Par.: A. R. Moldenke

Figure 18. Distribution of Verbena tenuisecta in the United States.

Herbarium curators who have material of this species from additional counties are asked to send it to the author for verification and record, so that future editions of this map may be more complete

Mapping by counties done by Andrew R. Moldenke



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704 (S). Webster Par.: Moldenke & Woods 545 (S). TEXAS: Angelina Co.: D. S. Correll 15325, in part (Rf); Lewis & Oliver 5242 (Nb); Lundell & Lundell 11065 (N, Rf). Chambers Co.: Miss Mathews 39 (Au). Galveston Co.: Mrs. A. F. Nelson s.n. [3-15-42] (Au). Hardin Co.: Cory 52723 (Du--362507, N, No--15429, W--1924344). Harris Co.: G. L. Fisher 200 (W--1074632), 52115 (Ew); L. H. Pammel s.n. [Houston, 3-16-29] (Io--132999); Traverse 981 (Au--179401), 1383 (Au--197025). Jasper Co.: Lundell & Lundell 10511 (Ca--767266, Du--364576, Ld, W--1887687), 10550 (Ld, W--1887693); Rose-Innes & Warnock 21818 (Au, N, S); Tharp s.n. [4/13/41] (Au, N).. Jefferson Co.: C. C. Albers 34008 (Au, Au), s.n. [8/29/34] (Au); J. F. Brenckle 48068 (N). Montgomery Co.: F. W. Gould 8580 (Au--191835). Nacogdoches Co.: Biggar s.n. [August 6, 1944] (Au). Newton Co.: Correll, Johnston, & Edwin 22258 (Ld); Tharp 253 (Mi), s.n. [7/23/39] (Au, Au). Orange Co.: Wild Wood Club s.n. [Orange, 3/22/31] (Au). Polk Co.: Cory 56706 (W--2007939); Girvin s.n. [Indian Res., March 15, 1940] (Au, Ca--882637, N); Tharp s.n. [5/14/42] (Au, Ca--882830); Tharp, Turner, & Johnston 54746a (Au--122755, Au--122762). Sabine Co.: Correll, Johnston, & Edwin 22229 (Ld); Parks & Cory 22734 (Tr), 22735 (Tr). San Augustine Co.: Lewis & Smith 4997 (Nb). San Jacinto Co.: Shinners 25811 (Hi--197681). San Patricio Co.: F. B. Jones 1341 (Fj). Shelby Co.: Rowell, York, & Tharp 47239 (Au). Trinity Co.: Cory 54830 (Rf). Tyler Co.: Parks & Cory 22131 (Tr); Tharp, Turner, & Johnston 54849 (Au--122754, St). Upshur Co.: Shinners 14012 (Gg--392103). Victoria Co.: Bindwall 28 (Au); Parks & Cory 11105 (Tr). Waller Co.: Cory 54251 (No--14789, Rf); Trew 202 (Au--122763). ARIZONA: Pima Co.: Ehlers & Ehlers 6361 (Mi); F. W. Gould 5303 (Gg--351007, N). CALIFORNIA: Los Angeles Co.: L. S. Rose 46296 (Gg); Mrs. V. M. Spalding s.n. [Los Angeles, 1924] (Ca--279772); M. Winter s.n. [Los Angeles] (V). Santa Barbara Co.: H. M. Pollard s.n. [Dec. 1, 1950] (Gg--385736), s.n. [June 7, 1957] (Gg--416660); C. F. Smith 2403 (Gg--355016). Ventura Co.: H. M. Pollard s.n. [Apr. 29, 1944] (Gg--330305), s.n. [Oct. 1, 1944] (Gg--330972), s.n. [Apr. 28, 1945] (Gg--330972). MEXICO: Yucatán: E. C. Stewart 683 (Mi). HISPANIOLA: Dominican Republic: Ekman H.12615 (N, S, W--1711546); Faris 478 (W--1145997). PUERTO RICO: Stevenson & Johnston 1845 (W--1475867). WINDWARD ISLANDS: Barbados: Bailey & Bailey 257 (Ba). VENEZUELA: Angostura: Bailey & Bailey 1856 [Ciudad Bolivar] (Ba). Federal District: Ll. Williams 10138 (Ve--12847). PERU: Cuzco: Herrera 3450 (N). BRAZIL: Paraná: Dusén 9341 (N, S, W--1481763); Hatschbach 4218 (Ok), 7444 (Ca); Hatschbach & Pereira 7689 [Herb. Hatschbach 10306] (Lw);

Hooker s.n. [Mai 1858] (Ug--10500); Swallen 8872 (W--1933141). Rio Grande do Sul: Archer 4233 (N, N, Sp--36826, Sp, W--1705702); Henz E.9591 (N); Ihering 373 (N, Sp--20071); Jürgens 47 (B); Osorio s.n. [Cerro Tobatinga, Feb. 24, 1947] (Ug--14136, Ug--14154); Rambo 3939 [Herb. Inst. Bot. S. Paulo 50988] (N), 43778 (Rb), 51652 (W--2102128), 51703 (S); A. R. Schultz 465 (N). State undetermined: J. F. T. Müller 262 (P), s.n. (P). BOLIVIA: Santa Cruz: Kuntze s.n. [400 m., Sta. Cruz, 5.1892] (N); Paredo s.n. [El Pari, 23-XI-1946] (Gg--353278, N). Sucre: M. Cárdenas 628 (N). PARAGUAY: C. Alvarez s.n. [Asuncion, 1954] (Je--8834); Balansa 1025 (N--isotype); Hassler 2650 (N), 6144 [Macbride photos 17451] (Ca--944365, Kr--photo, N, N, N--photo, S), 7607 (Ca--944366), 12411 (Ca--929695, N, W--1057342), 12518 (Ca--929705, N, W--1057406); Herter 84886 (N); Jörgensen 3771 [Herb. Osten 22243] (Du--197838, N, S, Ug, W--1483811), 3777 (N); Lindman A.3643 (N, S); Morong 219 (C, C, Mi, W--71964, W--1417046); Osten 8064 (Go), 9013 (S); Edw. Palmer s.n. [Capt. Page Exped. 1853] (W--227577, W--227580); Ponder s.n. [Asuncion] (Je--7615); Ponder & Alvarez s.n. [10.18.1952] (Je--7617); Reales 253 (N); A. Robert 849 (N); T. Rojas 2536 [Herb. Osten 18186] (Ug), 12995 (N); Sandeman 4824 (K). URUGUAY: C. Alvarez s.n. [Trinidad, 1954] (Je--8703); Arechavaleta 21 (Ug, Ug), 22 (Ug), 23 (Ug), 23 bis (Ug), 30 (Ug); H. H. Bartlett 19862 (Ca--772525, W--1904710); Berro 133 (N), 2991 (N), 6022 (N), 7225 (N); Cabrera 3244 [Herb. Osten 23345] (N, N, S, Ug); Cabrera & Corte 9590 (W--2197981); Castellanos s.n. [Belle Unión, Jan. 28, 1948; Herb. Inst. Miguel Lillo 15177] (N, N); Chebataroff s.n. [San Javier, 1939] (Ug--4762); Herb. Mus. Hist. Nat. Montev. s.n. [dept. Minas, Feb.] (Ug), s.n. [banks of Rio Negro near Mercedes] (Ug); Herter 181h [Herb. Herter 85536] (N), 1811 [Herb. Herter 96600] (N), 4411 (N), 50887 (N), s.n. [Nueva Palmira; Herb. Osten 19032] (Ug), s.n. [Paysandú, Sept.-Oct. 1907; Herb. Osten 20415] (Ug); Schröder s.n. [dept. Paysandú, Dec. 1924; Herb. Osten 17303] (Ug, Ug); Teisseire s.n. [Colonia, 1913] (Ug); D. Wright s.n. [Cunapiru, 1928] (Bm). ARGENTINA: Buenos Aires: Boffa 25 (N); Cabrera 1860 (N), 5179 (N), 5628 (Ca--882828); Commerson s.n. [Buenos-Ayres et Montevideo] (B); Eyerdam, Beetle, & Grondona 23443 (Ew); Hauthal 56 (N), 640 (N); Kuntze s.n. [Tandil, Nov. 1892] (N); Lefebre s.n. [Buenos Aires, 1885] (Br); Parodi 8962 (N), 12233 (N, N); Pastore & Troncoso 984 (W--1954401); Ruiz Leal 14887 (Rl), 14891 (Ss); Scala 11 (N); A. G. Schulz 5680 (Sz); Sota 24 (Gg--353277, N); Troncoso 984 (W--1858385); J. Tweedie s.n. [Banda oriental] (Bm, Bm); Wall & Sparre s.n. [Sierra Bachiche, 2/11/46] (Ew, Ew), s.n. [Sierra El Volcan, 3/11/46] (Ew, Ew); F. A. Wetmore 830 (W--

1065981). Catamarca: Wall & Sparre s.n. [La Negrillo, 28/11/46] (Ew). Chaco: R. M. Aguilar 409 (N), 843 (S, S); Jörgensen 2465 [Herb. Osten 11867] (Ug, Ug, W--1055175); Malvárez 1330 (Es, N); T. Meyer 139 [Herb. Osten 22660] (Ug); A. G. Schulz 1471 (N), 1471a (N), 1474 (N); Venturi 9780 (N). Córdoba: Castellanos s.n. [Valle de los Reartes, Dec. 15, 1919; Herb. Osten 15290] (Ug), s. n. [Herb. Mus. Argent. Cienc. Nat. 31195] (N); Cozzo s.n. [Barrio Jardin, X.1946] (N); J. Gutiérrez 89 (Gg--352680, N), s.n. [19/21 -II-1947] (N); Hieronymus s.n. [14.XI.1875] (N), s.n. [near Córdoba, 14.XI.1876] (Br, Ca--882829), s.n. [in vicinity of Córdoba, Nov. 18, 1876] (Ug); Kuntze s.n. [Córdoba, 15/XII/1891] (W--701723), s.n. [Córdoba, XII.1891] (N, N); Maldonado Bustos 95 (N), 103 (N, N); Moldenke & Moldenke 19712 (Es, Es, N); O'Donell & Rodriguez 266 (Ca, Ut--1154114b); Osten 13107 (Ug); Rodrigo 255 (N); Ruiz Leal 12098 (Ss); Scala 10002 (N); C. Skottsberg s.n. [Córdoba, 11/10/1948] (Go); Terribile 633 (N), 671 (N); Troncoso 291 (N, N). Corrientes: Alboff s.n. [9.XI.1896] (N); Berti & Escalente 338 (W--1987931); Cabrera 11735 (W--2198014); Ibarrola 1283 (Bm, S), 3218 (N); T. Meyer 6437 (Ut--72506), 6445 (Ut--1154036), 6610 (Ut--72508b, Ut--1154126); Pedersen 1323 (N, W--2122759), 3949 (N, S, W--2283324); Rodrigo 617 (N, N); Ruiz Huidobro 3742 (Es, N), 3769 (Es, N). Entre Ríos: Burkart 3616 [Herb. Osten 22179] (Ug); Cabrera 12360 (W--2370662); Lorentz 1483.6 (Vt), s.n. [Concepcion del Uruguay, 7.1877] (Go), s.n. [Concepcion del Uruguay] (B); T. Meyer 9993 (N); Ruiz Huidobro 3588 (N, We), 3637 (N); Schwacke s.n. [Concepcion del Uruguay, IV/1880] (Ja--46583). Formosa: Jörgensen 2470 [Herb. Osten 13675] (Ug); Morel 530 (Bm); Pierotti 10 [Herb. Inst. Miguel Lillo 72839] (Ca--165859, Ut--26856b); Venturi 9099 (W--1591417); J. West 8470 (Ca--904844). La Pampa: Cabrera 6735 (N); J. Fortuna 14 (Ca), 17 (Ca--165937); Paso s.n. [Chasicó, April 1940; Parodi 13647] (N). Misiones: Archer 4609 (W--1705471); Bertoni 1970 (Bm, N), 2562 (N); Ekman 1983 (N, S), 2033 (Mi, N, S), 2034 (S), 2035 (Mi, N); Grtner 378 [Herb. Osten 23178] (Ug); Lilliesköld s.n. [Colonia Bonpland] (S); T. Meyer 11339 (N); Montes 1079 (N), 1825 [10] (N, N), 2278 (N); D. Rodriguez 578 [Santa Ana, Sept. 13, 1912; Herb. Inst. Miguel Lillo 31471] (Go, N); Ruiz Huidobro 5417 (N); G. J. Schwarz 1177 (N), 1251 (S), 1885 (N), 2217 (Au--122773, Ok), 2260 (N), 2502 (N), 3040, in part (S), 3086 (N, Rf), 3159 (N), 3232 (N). Santa Fé: Job 795 (N), 1050 (N); Kuntze s.n. [Ceres, Oct. 1892] (N); Ruiz Huidobro 3147 (N), 3359 (N); Ruiz Leal 14247 (Ss); Terribile 535 (N); Venturi s.n. [Herb. Mus. Argent. Cienc. Nat. 23683] (N), s.n. [Herb. Fac. Cienc. Buenos Aires 14] (Sp, Sp--25785). Arroyo Seco Island: Barriomuevo s.n. [7-II-1947] (N); Greco s.n. [7-II-1947]

(N). Province undetermined: Collector undesignated s.n. (N); Wall & Sparre s.n. (Ew). SWEDEN: Blom s.n. [5/8/1936] (Go). SPAIN: Secondaire 6917 (Lu). EGYPT: E. W. Baker 24 (Bm). CONGO LEOPOLDVILLE: Bredo 1159 (Br). SOUTHERN RHODESIA: A. Peter 30874 [V.31] (B); Saunders Davies s.n. [Umtali, 5.2.34] (Bm). SOUTH AFRICA: Natal: A. Peter 30392 [V.13] (B). Transvaal: J. G. Gilmore 1792 (Af); Goossens s.n. (Af); Kretzchmar s.n. (Af--7908); Meeuse 9137 (N, Z), 9143 (Cb); E. Wall s.n. [Nelspruit, 25/10/38] (Ew). ISRAEL: E. Wall 5, in part [2/532] (Ew). IRAQ: Lazar 432 (N, W--1741460). INDIA: Madras: Kuriakose s.n. [12-12-32] (N). Uttar Pradesh: U. Singh 163 (Ba--23763, Ca--36114, La, N). GREATER SUNDA ISLANDS: Java: Brinkman 744 (Bz--23757); Van Oosten 6 (Bz--23760). Sumatra: Dames s.n. (Bz--72930); Lörzing 8494 (Bz--23762). AUSTRALIA: New South Wales: Goode 145 (Bm). Queensland: R. Jones 102 (N); Pedley 534 (N). CULTIVATED: Argentina: Herb. Gen. Jard. Bot. B. A. s.n. (Ca--202825); Hieronymus s.n. [Córdoba, 14.XI.1875] (W--71963). Belgium: Collector undesignated 210 (Br); M. Martens s.n. [1838] (Br). California: Bailey & Bailey 7737 (Ba); Eastwood s.n. [Huntingdon's Place, Aug. 1915] (Gg--31412); Lenington s.n. [Pomona, Dec. 10, 1927] (Hp); McClintock s.n. [August 16, 1947] (N); Purdy s.n. [Ukiah, April 1925] (Gg--128571); Walther 141 (Ba), s.n. [Pasadena, June 1921] (Gg--31410); W. F. Wight 1636 (Cm); Woodcock 946 (Ba). Congo Leopoldville: RR.PP. Salésiens 341 (Br). Cuba: Marcus 1962 (N). Dominican Republic: Valeur 448 (N, W--1273798). England: Collector undesignated s.n. [in horto Anglia legi] (Lu). Florida: H. H. Hume s.n. [June 1920] (Ba). France: Herb. Decaisne s.n. [H. P.] (Br). Georgia: Eggleston 5104 (Dt). Germany: Mühlbach s.n. [Potsdam, 9 August 1942] (B). Hawaiian Islands: Neal s.n. [Apr. 11, 1929] (Bi), s.n. [June 1, 1941] (Bi), s.n. [Feb. 28, 1945] (Bi). Illinois: Herb. Div. Floric. Univ. Ill. 177 (Ur). India: Dewan 253 (Au--121732); Herb. Blatter 23484 (Xa); V. Mehra 7 (Dt). Italy: Herb. Harvey s.n. [h. M. P., junio 1843] (Du--166498); Lucci s.n. [Naples, summer 1924] (Cm). Java: C. A. Backer 22692 (Bz--23759); Bakhuizen van den Brink 2681 (Bz--23758), 2699 (Ut--26525a); Herb. Hort. Bot. Bogor. XV.K.A.XLV.10 (Bz, Bz--26437, N); Visser Smits s.n. [1916] (Bz--23761). Kenya: Herb. Hort. Reg. Kew. 2615 (Br). Louisiana: L. H. Bailey s.n. [New Orleans, July 28, 1918] (Ba). Maryland: McCann s.n. [9-15-36] (Md, Md). Massachusetts: L. H. Bailey s.n. [Cambridge, August 6--12, 1929] (Ba); R. E. Torrey s.n. [Amherst, Aug. 4, 1942] (Ms); Torrey & Wood s.n. [July 3, 1946] (Ms). Missouri: J. H. Kellogg s.n. [Shaw's Garden, Aug. 25, 1911] (N, N, W--1325358). New York: L. H. Bailey s.n. [Aug. 4, 1922] (Ba), s.n. [July 19, 1924] (Ba), s.n. [Aug. 10, 1924] (Ba), s.n. [July

23, 1925] (Ba), s.n. [Aug. 7, 1925] (Ba); Burdick 24 (Ba); Hartling s.n. [N. Y. Bot. Gard. Cult. Pl. 42722] (N); McSweeney s.n. [N. Y. Bot. Gard. Cult. Pl. R.305/39] (N); H. N. Moldenke 11282 (N), 18237 (N); Moldenke & Moldenke 11886 (N); R. C. Schneider s. n. [N. Y. Bot. Gard. Cult. Pl. 22428] (N); Seringhaus s.n. [N. Y. Bot. Gard. Cult. Pl. R.305/39] (N). Nicaragua: Garnier 615 (N); Maxon, Harvey, & Valentine 7243 (W--1180955). Oklahoma: Stratton 6125, in part (N, St--26159). Oregon: Dana s.n. [Hermiston, August 1937] (Or--36065). Pennsylvania: H. N. Moldenke 17095 (Au--122770, St). Philippine Islands: M. S. Clemens 18433 (Ca--368059). Puerto Rico: E. E. Barker s.n. [April 21, 1921] (Ba); Britton, Britton, & Boynton 8296 (N), 8712 (N); Moldenke & Moldenke 19536 (N). Russia: Herb. Hort. Bot. Petrop. s.n. (W--71991). Sweden: Herb. Regnell s.n. [Hort. Bergiano, 8/1897] (S). Switzerland: Herb. Meisner s.n. [20 Jul. 1837] (M). Texas: C. L. Lundell 10937 (N, Rf); Teas s.n. [Houston, June 1926] (Ba). Trinidad: Bailey & Bailey s.n. [Feb. 16, 1921] (Ba); W. E. Broadway 4997 (W--424788).

VERBENA TENUISECTA var. ALBA Moldenke, Annot. & Classif. List 109 & 113. 1939.

Synonymy: Verbena erinoides alba Benary ex Wittmack, Gartenfl. 49: 585. 1900. Verbena erinoides var. alba Moldenke, List Spec. Mold. Southeast. Set 12, nom. nud. 1930. Verbena erinoides alba Hort. ex Stapf, Ind. Lond. 6: 429. 1931. Verbena tenuisecta lus. albiflora Briq. ex Moldenke, Alph. List Invalid Names 51, in syn. 1942. Verbena erinoides var. alba Hort. ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena tenuisecta alba Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2209. 1951.

Bibliography: Wittmack, Gartenfl. 49: 585. 1900; Bull. Soc. Tosc. Ortic. 26: 36. 1901; Moldenke, List Spec. Mold. Southeast Set 10 & 12. 1930; Stapf, Ind. Lond. 6: 429. 1931; Grey & Hubbard, List Pl. Grow. Bot. Gard. Atkins Inst. 204. 1933; L. H. Bailey, Cat. Florists Handl. Verbenac. mss. 1935; Anon., Journ. Roy. Hort. Soc. Lond. 61: 401. 1935; Dermen, Cytologia 7: 161, 162, & 173. 1936; Moldenke, Annot. & Classif. List 109 & 113. 1939; Moldenke, Suppl. List Invalid Names 8. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 5, 75, & 102. 1942; Moldenke, Alph. List Invalid Names 47 & 51. 1942; Schnack, Anal. Inst. Fitotéc. Sta. Catalina 4: 18. 1942; Moldenke, Am. Midl. Nat. 32: 576. 1945; Moldenke, Alph. List Cit. 1: 18--20, 23, 56, & 291. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 24. 1947; Moldenke, Alph. List Cit. 2: 454 (1948), 3: 742 & 913 (1949), and 4: 979 & 1257. 1949; Moldenke, Phytologia 3: 72. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 9, 10, 107, 165, & 200. 1949; Moldenke, Phytologia 3: 289 & 290 (1950) and 3: 468. 1951; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2209 & 2213. 1951; Mol-

denke, Journ. Calif. Hort. Soc. 15: 83. 1954; Moldenke, Résumé 12, 14, 118, 128, 224, 364, & 376. 1959; Moldenke, Phytologia 8: 123. 1961; Moldenke, Résumé Suppl. 3: 41 (1962), 4: 3 (1962), 5: 1 & 2 (1962), 6: 3 (1963), and 7: 2. 1963; Pearce, New High-lights in Fls. 20. 1963; Pearce, 1964 Garden Aristocrats 20. 1964; Moldenke, Résumé Suppl. 8: 5. 1964.

Illustrations: Wittmack, Gartenfl. 49: 585. 1900; Bull. Soc. Tosc. Ortic. 26: 36. 1901.

This variety differs from the typical form of the species in having white corollas, drying to a pale-lavender. It is described as a prostrate or trailing annual or perennial, sometimes suffrutescent, 15—60 cm. tall, spreading, the corolla-tube to 16 mm. wide, and the chromosome number: 2n = 10.

The type of this variety was collected by myself (no. 1163) in a dry sandy ditch at Sneads, Jackson County, Florida, on May 6, 1930, and is deposited in the Britton Herbarium at the New York Botanical Garden. The type of V. tenuisecta lus. albiflora was collected by Teodoro Meyer (no. 142) at Fontana, Chaco, Argentina, where it was not frequent, preferring grassy places rather than loose sand, in October, 1931, and is deposited in the Osten Herbarium at the Museo de Historia Natural in Montevideo.

The variety was apparently introduced into cultivation in 1900. Bailey (1935) says that seeds were at that time offered to the horticultural trade by Chester Jay Hunt (Little Falls, New Jersey), Muller-Seely, Trivetts, and Waterer. Earlier than 1935 seed were marketed by Bodger and by Haage & Schmidt. Seeds which produced L. H. Bailey s.n. [Oct. 3, 1926] came from Haage & Schmidt, Erfurt, Germany, as their no. 5200 and were sown by Dr. Bailey in May. Pearce (1963) says of the plant "Ferny mat-former. Pretty white flowers. Ever-bloomer", 6 inches tall, and sells the seeds at 25 cents per package. L. H. Bailey s.n. [May 17, 1923], cited below, bears a notation by the collector "with appendage or wing below anther" and E. P. Bradbury s.n. [Coolidge Nursery, 12/12/15] has a note by him [Dr. Bailey] "with a wing below anther". His no. 12227 has a notation to the effect that a duplicate was sent to Dr. Briquet in Geneva.

The variety has been collected in dry sandy ditches and grassy roads, on road shoulders, in campos and spiny campos, and along roadsides, flowering from October to July, in fruit in July and November. Schulz describes it as "very scarce". Common names recorded for it are "erinoides White" and "verbena blanca".

Material has been misidentified and distributed in herbaria as V. canadensis (L.) Britton, V. tenera Spreng., and typical V. tenuisecta Briq. D. S. Correll 15325 is a mixture with typical V. tenuisecta.

For those interested in dating the spread of species and varieties of this genus in new areas, following are the earliest dates so far known to me for the variety in parts of the southern United States: South Carolina: Florence County -- 1962. Georgia: Bleckley, Brook, Clinch, Decatur, Grady, Hancock, Jefferson, Lanier,

Lowndes, Screven, Telfair, Thomas, Ware, & Washington Counties -- 1962. Florida: Jackson County -- 1930; Calhoun, Gadsden, & Leon Counties -- 1962. Louisiana: Jackson & Vernon Parishes -- 1963. Texas: Angelina County -- 1956. Wagenknecht refers to it as "a common weed in sandy soil along roadsides."

In all, 51 herbarium specimens, including type material of most of the names involved, have been examined by me.

Citations: SOUTH CAROLINA: Florence Co.: A. R. Moldenke 448 (Fg). GEORGIA: Bleckley Co.: A. R. Moldenke 378 (Fg). Brook Co.: A. R. Moldenke 310 (Fg, Fg). Clinch Co.: A. R. Moldenke 331 (Fg). Decatur Co.: A. R. Moldenke 297 (Fg). Grady Co.: A. R. Moldenke 300 (Fg); Pyron & McVaugh 2195 (Gu--16187). Hancock Co.: A. R. Moldenke 393 (Fg). Jefferson Co.: A. R. Moldenke 401 (Fg). Lanier Co.: A. R. Moldenke 325 (Fg). Lowndes Co.: A. R. Moldenke 322 (Fg). Screven Co.: Ahles 54307a (Hi--200787); A. R. Moldenke 415 (Fg). Telfair Co.: A. R. Moldenke 395 (Fg). Thomas Co.: A. R. Moldenke 307 (Fg, S). Ware Co.: A. R. Moldenke 342 (Z). Washington Co.: A. R. Moldenke 398 (Fg). FLORIDA: Calhoun Co.: Davis & Davis 11624 (Hi--115552); A. R. Moldenke 274 (Fg); B. L. Wagenknecht 3620 (Lw, Lw). Gadsden Co.: A. R. Moldenke 292 (Fg). Jackson Co.: H. N. Moldenke 1163 (Go--isotype, H--5467--isotype, It--isotype, N--type, S--isotype, Up--isotype, Ur--isotype, W--1581747--isotype). Leon Co.: A. R. Moldenke 289 (Fg). LOUISIANA: Jackson Par.: Moldenke & Woods 536 (S). Vernon Par.: A. R. Moldenke 705 (S). TEXAS: Angelina Co.: D. S. Correll 15325, in part (Rf). PARAGUAY: T. Rojas 2528 [Herb. Osten 18185] (N, Ug). ARGENTINA: Chaco: T. Meyer 142 [Herb. Osten 22659] (Ug); A. G. Schulz 1473 (N), 2888 (N). Misiones: Bertoni 2265 (N); Ekman 2035 (S). CULTIVATED: California: Bailey & Bailey 7953 (Ba); E. P. Bradbury s.n. [Coolidge Nursery, 12/12/15] (Ba). Cuba: L. H. Bailey 12227 (Ba). Java: Herb. Hort. Bot. Bogor. XV.K.A.KLV.15 (Bz--23756). New York: L. H. Bailey s.n. [May 17, 1923] (Ba), s.n. [Oct. 3, 1926] (Ba). Oklahoma: Stratton 6125, in part (N, St--26160).

VERBENA TENUISECTA var. GLABRATA Moldenke, Phytologia 4: 451, nom. nud. (1953), 7: 259. 1960.

Synonymy: Verbena tenuisecta var. glabra Moldenke, Résumé 474, sphalm. 1959.

Bibliography: Moldenke, Phytologia 4: 451. 1953; Reitz, Sellowia 11: 57 & 134--135. 1959; Moldenke, Résumé 111 & 474. 1959; Moldenke, Phytologia 7: 259. 1960; Moldenke, Résumé Suppl. 2: 13. 1960; Reitz, Sellowia 13: 67 & 110. 1961.

This variety differs from the typical form of the species in having its leaf-blades subglabrate and the calyx only very sparsely strigillose.

The type of the variety was collected by Raulino Reitz (no. C. 1280e) on a campo at Sombrio, at an altitude of 10 meters, Santa

Catarina, Brazil, on September 12, 1945, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is described by the collector at a creeping herb with rose-colored flowers. Common names recorded for it are the usual "camaradinha", "formosa sem dote", and "jurupeba" used for all the members of the genus in that area. It has been collected at altitudes of 10--15 meters, flowering in October and December. In all, 2 herbarium specimens, including the types of both names involved, have been examined by me.

Citations: BRAZIL: Santa Catarina: Reitz C.1279 (N), C.1280e (N--type).

VERBENA TENUISPICATA Stapf, Denkschr. Akad. Wiss. Wien 50: 34--35. 1885.

Bibliography: Stapf, Denkschr. Akad. Wiss. Wien 50: 34--35. 1885; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 53 & 102 (1942) and [ed. 2], 124 & 200. 1949; Moldenke, Résumé 158 & 474. 1959; Moldenke, Phytologia 10: 217, 218, & 301. 1964.

Tall perennial herb, simple, strict, 35--50 cm. tall; stems rigid, tetragonal, short-pilose especially on the edges, the hairs resting on very small tubercles, scabrously appressed, apparently double in two lines, the remainder smooth; leaves in outline ovate or ovate-oblong to ovate-lanceolate, the uppermost lanceolate, contracted into a short and narrow or often more or less broadened petiole, rather obtuse at the apex, deeply pinnately incised at the base, coarsely dentate above, the segments oblong or linear-lanceolate, dentate, strigose-hirsute on both surfaces with greatly appressed hairs especially on the veins beneath, inconspicuously revolute at the margins; bractlets ovate, about 2 mm. long, 2/3 as long as the calyx, acute at the apex, hirsute, densely ciliate on the margins; calyx 2.5--3 mm. long, 5-angulate, 5-toothed, white-membranous between the angles and the herbaceous teeth, ciliate on the margins, hirsute, sparingly glandulose; corolla blue, 3--3.25 mm. long, the tube short-exserted, scarcely incurved, the lobes of the limb obovate, subequal.

The type of this little-known species was collected by J. E. Polak and Th. Pichler in the dried-out portion of a swamp near Hamadan, Persia, on July 2, 1882. Stapf says of it "Der V. officinalis L. sehr nahe stehend, aber durch die feinen, kleinblüthigen Ähren und fast blauen Corollen verschieden." It has been misidentified and distributed in herbaria as V. officinalis L. and has been collected at 1300 meters altitude. Only a single specimen has been seen by me thus far.

Citations: IRAN: Gauba 1698 (B).

VERBENA TESSMANNII Moldenke, Phytologia 3: 45--46. 1948.

Bibliography: Moldenke, Phytologia 3: 45--46 (1948) and 3: 75. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94 & 200. 1949; Stellfeld, Trib. Farmac. 9 (10): 167. 1951; E. J. Sal-

isb., Ind. Kew. Suppl. 11: 263. 1953; Angely, Fl. Paran. 7: 6, 7, & 13 (1957) and 12: 17. 1958; Moldenke, Résumé 111 & 474. 1959; Angely, Fl. Paran. 16: 79 (1960) and 17: 47. 1961.

Herb; stems and branches elongate, sharply tetragonal, often slightly margined, rather densely spreading-pubescent or hirtellous, the hairs standing at right angles to the surface of the stem or branch; principal internodes 5--8 cm. long; nodes anmulate; leaves decussate-opposite; petioles slender, 4--6 mm. long, rather densely hirtellous; leaf-blades firmly chartaceous, rather uniformly bright-green on both surfaces or somewhat lighter beneath, lanceolate, 2--4 cm. long, 7--15 mm. wide, acute at the apex, acuminate at thr base, irregularly and coarsely toothed, the lowest teeth often lobe-like, very rough above with long closely appressed white strigose hairs which are bulbous-based, irregularly and rather densely short-pubescent beneath with the pubescence densest and most conspicuous on the larger venation; midrib very slender, impressed above, prominent beneath; secondaries very slender, about 4 per side, impressed above, prominulous beneath; tertiaries rather few and subimpressed above, more numerous and subprominulous beneath; inflorescence terminal, spicate; peduncles slender, acutely tetragonal, spreading-hirtellous like the branches, 1.7--5 cm. long; spikes elongating to 4.5 cm. in fruit, densely many-flowered, the calyxes closely imbricate; bractlets lanceolate, about 6 mm. long, 1 mm. wide, attenuate-subulate at the apex, long-ciliate on the margins (the cilia white and antrorse), puberulent on the back; calyx tubular, about 13 mm. long, 5-costate, yellow-green with gray-carmine veins, rather irregularly short-pubescent or puberulent with whitish hairs, marked with scattered black capitate glands, the rim 4-toothed, the teeth about 2 mm. long, narrow-lanceolate, subulate-tipped, widely divergent and often recurved during anthesis and fruiting; corolla lilac, its slender tube to 19 mm. long, irregularly pulverulent on the outside, the limb about 8 mm. wide.

The type of this species was collected by Günter Tessmann -- in whose honor it is named -- as Herb. Mus. Paran. 2923, in clear campos at the edge of woods between shrubs and tall herbs at Fazenda Lagoa Dourada, near Vila Velha, at an altitude of 830 meters, 21 km. southeast of Ponta Grossa, Paraná, Brazil, on February 17, 1948, and is deposited in the Britton Herbarium at the New York Botanical Garden.

In all, 2 herbarium specimens, including the type, have been examined by me.

Citations: BRAZIL: Paraná: Stellfeld 4354 (N); Tessmann s.n. [Herb. Mus. Paran. 2923] (N--type).

VERBENA TEUCRIIFOLIA Mart. & Gal., Bull. Acad. Roy. Brux., ser. 1, 11 (2): 322. 1844.

Synonymy: Verbena exilis Schau. in A. DC., Prodr. 11: 553. 1847. Verbena teucrifolia Mart. & Gal. ex Moldenke, Résumé Suppl. 7: 10, in syn. 1963.

Bibliography: Mart. & Gal., Bull. Acad. Roy. Brux., ser. 1, 11

(2): 322. 1844; Schau. in A. DC., Prodr. 11: 553 & 555. 1847; Walp., Repert. 6: 687. 1847; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1178 & 1179. 1895; Perry, Ann. Mo. Bot. Gard. 20: 242, 249, 312, 331, 334, 335, & 356. 1933; Moldenke, Prelim. Alph. List Invalid Names 46. 1940; Moldenke, Alph. List Invalid Names 47. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 19, 20, & 102. 1942; Moldenke, Alph. List Cit. 1: 28, 143, 144, 207, 218, & 260 (1946) and 2: 479, 494, 498, 519, 540, 542, 549, 607, 626, 639, & 642. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 44. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 33, 36, & 200. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 14. 1949; Moldenke, Alph. List Cit. 3: 660, 683, 693, 715, 767, 802, 829, 831, 877, & 933 (1949) and 4: 1012, 1076, 1111, 1166, 1171, 1295, & 1303. 1949; Rioja & Herrera, Anal. Inst. Biol. Mex. 22: 584. 1951; Rzedowski, Anal. Esc. Nac. Cienc. Biol. 8: 105. 1954; Moldenke, Inform. Mold. Set 49 Spec. 3. 1954; Moldenke, Résumé 40, 43, 364, & 474. 1959; Lewis & Oliver, Am. Journ. Bot. 48: 639--641, fig. 12. 1961; Moldenke, Phytologia 8: 124 (1961) and 8: 212 & 423. 1962; Moldenke, Résumé Suppl. 3: 10 (1962), 4: 4 (1962), 6: 4 (1963), and 7: 10. 1963; Moldenke, Phytologia 8: 462 (1963), 9: 16, 17, 19, 24, & 84 (1963), 9: 396 & 398 (1964), 10: 94, 102, 105, 140, 141, & 218 (1964), and 11: 32. 1964.

Illustrations: Lewis & Oliver, Am. Journ. Bot. 48: 640, fig. 12. 1961.

A decumbent or procumbent to completely prostrate herb, forming dense mats closely appressed to the ground, 45—100 cm. in diameter, typically glabrous; stems several from a common base, prostrate or repent, more or less diffusely branched, to 45 cm. long, 4-angled, rooting at the nodes, covered with leaves and flowers in small heads from the leaf-axils, glabrate or hirtellous; leaves decussate-opposite; petioles margined; leaf-blades obovate in outline, 1.5—2.5 cm. long, cuneate at the base and narrowed or attenuate into the petiole, pinnatifid-laciniate or -incised, the segments oblong or linear-oblong, obtuse or obtusish at the apex, varying from bright-green or bright yellow-green and glossy to grayish, typically glabrous, often sparsely strigillose on both surfaces, subglaucescent beneath, the margins slightly revolute, the venation impressed above; inflorescence spicate or at first in small close and flat heads to 2.5 cm. wide, the spikes axillary or terminal, solitary, lax, sessile or short-pedunculate, scarcely surpassing the uppermost leaves, few-flowered; bractlets lanceolate, approximately half as long as the calyx, acuminate-acute at the apex, ciliate-margined; calyx 5—7 mm. long, typically subglabrous, often sparsely hirtellous or occasionally hirsute, its lobes short, acute; corolla hypocrateriform, rather large, varying from purple, light-purple, bright-purple, deep-purple, mauve-purple, bright mauve-purple, or reddish-purple to rose-lilac, magenta, red-mauve, lavender, violet, pinkish, or pink, rarely white, its tube slightly longer than the calyx, the limb 5—7 mm. long; anther-glands minute; cocci 2.5—3 mm. long, chiefly reticulate-scrobiculate, the commissural surface

muriculate or almost smooth; chromosome number: n = 15.

The type of this rather perplexing species was collected by Henri Guillaume Galeotti (no. 777, in part) in subalpine forests near the summit of Mount Orizaba, at an altitude of 10,000 feet, Vera Cruz, Mexico, in August, 1840, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The type of V. exilis was collected by Carl August Ehrenberg (no. 131)near Huaxalote, San Luis Potosí, Mexico, and was deposited in the herbarium of the Botanisches Museum at Berlin, now unfortunately destroyed. Liebmann 11328 bears a notation "excellent match for the type collection".

Galeotti 777, as represented by Macbride's type photograph no. 24699 of a specimen in the Delessert Herbarium at Geneva, has the leaves broad, very shallowly toothed, and is actually V. cameronensis L. I. Davis. The Brussels specimen of the same collection number is the real V. teucriifolia. Martens & Galeotti (1844) say of it "Affinis Verbenae erinoides Lam.; sed glabrite foliisque minoribus minus laciniatis nec tam profunde incisis differt." Schauer (1847) says "Affinis V. erinoidi, sed glabritie foliisque minoribus minus laciniatis mox tamen profunde incisis diversa."

The species has been collected in fields and wasteland, open or alpine meadows, lava beds and talus, moist pinewoods or pine woodlands, subhumid montane oak forests, dry waste ground near roadsides and among parched grass, fallow fields, arid grasslands, on open ground and among rock of pyramids, llanos and mountainsides, dry banks and steep slopes, grassy silty flats, and dry sunburned exposures, along roadsides, on lakeshores, and at the edges of cultivation. It inhabits dark-brown silt-loam, black volcanic dust and rock, bunchgrass meadows in black volcanic soil, semi-xeric sedimentary soil with some loam, red rocky soil, rich clayish loam on lakeshores, steep slopes of reddish gravelly clay-loam, volcanic soil on mountainsides, and dark sand in pine forests, at altitudes of 6,000 to 13,100 feet, flowering from March to December, fruiting in March and from June to September.

Beaman describes it as "abundant in moist black loam soil in large opening in Pinus hartwegii forest" and also "occasional on bare soil in grassy openings in Pinus-Abies-Cupressus forest", Powell & Edmondson as "abundant in red rocky soil of roadside", and Stone as "common in dry volcanic sand". Iltis, Koeppen, & Iltis say "plants creeping, weedy, on open disturbed edge of Festuca-Muhlenbergia-Piptochaetium-Sporobolus tussock grassland [sacatonal]" with scattered Strobus and many herbs like Castilleja, Eryngium, etc. Balls notes that "the plant appears to have a very long flowering period in pine woods and on open banks and slopes, usually in full sun; an excellent carpeter". Fearing & Thompson say "trailing among grasses in open prairie, black loam soil."

The flowers are described as "pink" on Hinton 11914; "lavender" on Leavenworth 292 and Schery 57; "purple" on Lundell & Lundell 12370 and Powell & Edmondson 746; "light-purple" on Fearing &

Thompson 98 and Oliver 179; "bright-purple" on Oliver 166; "deep-purple" on Balls 4866; "reddish-purple" on Balls 4481; "bright mauve-purple" on Balls 4067; "rose-lilac" on Iltis, Koeppen, & Iltis 85; "violet" on Galeotti 777; "red-mauve" on Balls 4182; "magenta" on Skutch 63; and as "mauve-purple to pinkish, with very rare albinos" on Balls 4565.

Material has been misidentified and distributed in herbaria under the names V. bipinnatifida Nutt., V. bipinnatifida Schau., V. ciliata Benth., V. elegans H.B.K., V. pumila Rydb., and V. teucriifolia var. corollulata Perry. On the other hand, the Stanford, Retherford, & Northcraft 241, distributed as V. teucrifolia, is actually V. wrightii A. Gray. Shreve 9147 is said to be a topotype and is a mixture with V. gracilis Desf.; Née 105 is a mixture with V. elegans H.B.K.; Schery 142 is a mixture with V. menthaefolia Benth., and Kenoyer s.n. [Popocatepetl, 7-2-38] is a mixture with Arenaria reptans Hemsl. in the Alsinaceae.

A vernacular name recorded for V. teucriifolia is "alfombrilla". Perry (1933) cites the following 18 additional specimens and 1 photograph not as yet seen by me: MEXICO: Federal District: C. R. Orcutt 3551 (E, F). México: Harshberger 41 (D, G); Pringle 2927 (F, G), 4180 (D, E, F, G). Michoacán: Arsène s.n. [Morelia, 9 July 1910] (F). Morelos: G. L. Fisher s.n. [Toro, Aug. 5, 1924] (E, F); Pringle 13792 (G). Puebla: J. G. Smith 464 (E); Stone s. n. [Chalchicomula, 8 April 1890] (D). San Luis Potosí: C. A. Ehrenberg 131 (E--photo). Vera Cruz: Galeotti 777, in part (K--isotype); C. L. Smith 1474 (G). GUATEMALA: Quezaltenango: Türckheim 1068 (D). The Pringle 4180 which she cites from "NY" is actually in the Columbia University herbarium; the Halsted s.n. [Mexico] & s.n. [sand hills, Perote] and E. W. Nelson 223 & 242 which she cites are regarded as V. ciliata Benth. by me. She says "The specimens cited vary greatly in degree of pubescence. The larger number are sparsely hirtellous or strigillose. The following are densely hirtellous-hirsute: Liebmann 11329, Nelson 196, 223, Smith 1474, Halsted, Smith 464, Nelson 242. The Guatemalan collections appear to be conspecific, although both the cilia of the bracts and the trichomes along the nerves of the calyx are somewhat coarser and stiffer than those of the Mexican material. V. teucriifolia is a slender plant easily separated from its nearest relatives by its prostrate or repent habit and few-flowered spikes"

The typical form of the species is glabrous or nearly so. It is very possible that the hairy form mentioned above by Miss Perry is not actually V. ciliata, but is what Schauer called V. exilis, which may very well be worthy of at least varietal status. Its original description reads as follows: "caule ramosissimo prostrato radicante, ramis teneris acute quadrangularibus pubescenti-hirtellis, foliis cuneatis basi longe attenuata quasi petiolatis

pinnatifido-incisis nervis supra impressis subtus strigillosis pagina infera subglaucescente, segmentis ovatis obtusiusculis margine revolutis integerrimis aut paucidentatis, spicis terminalibus alaribusque vix exsertis paucifloris compactis strigosohirtellis, bracteis oblongis acuminatis ciliatis calyce subulato-5-dentato subduplo brevioribus, appendice anth. dorsali minuta... Herbe teneritudine inter confines insignis. Folia 3—5 lin. longa, lamina 1 1/2—2 lin. lata, paribus ima basi subdilatata fere contigua. Spicae brevipedunculatae, vix e summis foliis emergentes, 3—5-florae. Calyx plicatus, 3 lin. longus, pube sparsa. Corollae tubus calycem paulo excedens, limbus parvus. Caps. calyce superius contorto duplo brevior, coccis reticulato-rugosis."

In all, 137 herbarium specimens, including type material of most of the names involved, and 4 photographs have been examined by me.

Citations: TEXAS: Hidalgo Co.: Clover 567 (N). MEXICO: Durango: Forrer s.n. [Sierra Madre] (Ba); Shreve 9147, in part (Fs). Federal District: Balls 4067 (W—1793579), B.4067 (Ca—684654); Barkley, Rowell, & Webster 2234 (Au—123247, N); Barkley, Webster, & Paxson 589 (Au—123257, N); L. I. Davis 204 (N); Degener & Degener 26246 (Gg, N, W); Fröderström & Hultén 600 (N, S); Hitchcock & Stanford 7037 (Ca—710709, Du—315617, N, Pl—130169, Po—266388, Ur); R. L. Oliver 179 (Bm); C. R. Orcutt 3551 (W—574736, W—1266865); G. A. Rovirosa 18 (Me); H. H. Rusby 124 (N); Yates & Wilcox 164 (Ak—31226). Guanajuato: M. C. Johnston 2636a (Au—122775); Liebmann 11329 (W—1315094); Née 105, in part (Q). Hidalgo: H. E. Moore 3122 (N); Rose & Hough 4484 (W—346457). México: Balls 4182 (W—1793591), B.4182 (Ca—684964); Beaman 2098 (Mi); Fearing & Thompson 98 (Au—183103); Harshberger 41 (Up, Up—17130, W—398132); Hinton 4398 (N); Kuntze 23738 (N, N); Lundell & Lundell 12370 (N, Rf, Rf, W—12370); Matuda 21078 (N), 21117 (N), 27656 (Z), 28700 (Cb); Moldenke & Moldenke 19849 (Es, Lg, N, Ot, Sm); H. E. Moore 22 (Ca—919327); R. L. Oliver 166 (Bm); Paxson & Barkley 16M840 (Au, N, N); Powell & Edmondson 746 (Au—193090); Pringle 2927 (Vt), 4180 (Br, C, Ca—25144, Es, Fs, Me, Me, Me, Mm—15388, Ob—50871, S, Vt, W—56189); Rowell 2037 (Cs); Schery 57 (Mi); A. J. Sharp 44120 (N); J. N. Weaver 699 (N, W—2134169). Michoacán: Arsène 59 (Gg—162490); Barkley, Paxson, & Webster 2654 (Au—123276, N); Hinton 11914 (N, W—1890945); W. C. Leavenworth 292 (N, Tu—35531, Ur); Schery 142, in part (Mi, Mi). Morelos: G. L. Fisher 337 (W—1207416), s.n. [Toro, Aug. 5, 1924] (Mv); T. Hunt 131 (Cb), 144 (Cb); Iltis, Koeppen, & Iltis 85 (Ws); Pringle 13792 (Fs, Gg—421274, Mi, S, St, Vt, W—462892, W—1586607). Nuevo León: Waterfall 16599 (Ca). Oaxaca: Liebmann 11308 (W—1315089), 11316 (W—1315841), 15563 (La). Puebla: Balls

4481 (W--1793651); Barkley, Rowell, & Webster 2395 (Au--123246), 2398 (N); L. I. Davis 238 (N); Kenoyer s.n. [Popocatepetl, 7-2-38] (Fs); Rose & Hay 6049 (W--395853). Querétaro: Waterfall & Wallis 14024 (Au--182857, St, W--2297208). Tlaxcala: Balls 4866 (W--1793724), B.4866 (Ca--684499). Vera Cruz: Balls 4563 (W--1793663), B.4481 (Ca--684694), B.4665 (Ca--685112); Beaman 2191 (Au--201055); Galeotti 777, in part (Br--type, F--photo of type, N--photo of type, Si--photo of type, Z--photo of type); Liebmann 11328 (W--1315093), 11330 (W--1315095); Matuda S.147 (Mi); E. W. Nelson 196 (W--257525); Wawra 929 (V). State undetermined: Berlandier 505 [Mexico] (Bm); Kuntze 23738 [Jajalpa] (N, N). GUATEMALA: Chimaltenango: Skutch 63 (W--1585037). Quezaltenango: F. C. Lehmann 1603 (Bm, W--1323089, W--1323090); Türckheim 1068 (G, W--1323091).

VERBENA TEUCRIIFOLIA var. COROLLULATA Perry, Ann. Mo. Bot. Gard. 20: 335. 1933.

Bibliography: Perry, Ann. Mo. Bot. Gard. 20: 312, 335, & 356. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 19 & 102. 1942; Moldenke, Castanea 10: 40. 1945; Moldenke, Alph. List Cit. 1: 144 (1946) and 2: 540. 1948; Moldenke, Phytologia 2: 479. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 33 & 200. 1949; Moldenke, Alph. List Cit. 3: 799 & 829. 1949; Moldenke, Résumé 40 & 474. 1959; Moldenke, Phytologia 9: 16 & 17 (1963) and 10: 102 & 218. 1964.

This variety differs from the typical form of the species in usually being finely and densely pubescent, the calyx 5 mm. long, spreading-pubescent, the lobes very short, the corolla inconspicuous, its tube barely surpassing the calyx, the limb only 3 mm. wide, and the cocci 2.5 mm. long.

The type of the variety was collected by Charles Christopher Parry and Edward Palmer (no. 718) in the region of San Luis Potosí, Mexico, in 1878, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis. The variety has been found growing on plains at altitudes of 6000 to 8000 feet, flowering from June to August, fruiting in July and August. Material has been misidentified and distributed in herbaria as V. ciliata Benth. and as V. officinalis L. Parry & Palmer 719 is a mixture with V. ciliata.

Perry (1933) cites the following 9 additional specimens not as yet seen by me: MEXICO: Hidalgo: Orcutt 4146 (E, F); Rose, Painter, & Rose 8823 (G). San Luis Potosí: Parry & Palmer 718 (E--type, G--isotype), 719, in part (D, E, F). Zacatecas: Pringle 3551 (G). She comments that "The variety differs from the species chiefly in its smaller corollas; perhaps it is only a dimorphic form."

In all, 13 herbarium specimens, including type material, have been examined by me.

Citations: MEXICO: Federal District: L. I. Davis 232 (N). Hidalgo: Rose, Painter, & Rose 8823 (N, W--452306). México: Hinton

4398 (W--1822227); H. E. Moore Jr. 22 (Ms). San Luis Potosí: Parry & Palmer 718 (Io--isotype, Pa--isotype, W--56157--isotype), 719, in part (Io, W--56163). Zacatecas: Pringle 3551 (Me, Vt); Purpus 137 (W--470087).

VERBENA THYMOIDES Cham., Linnaea 7: 257. 1832 [not V. thymoides Chod., 1904, nor Phil., 1891].

Synonymy: Verbena thymioides Cham. ex Augusto, Fl. Rio Grande do Sul 233, sphalm. 1946. Verbena thymoides Cham. & Schlecht. ex Moldenke, Résumé Suppl. 6: 11, in syn. 1963.

Bibliography: Cham., Linnaea 7: 257. 1832; Steud., Nom. Bot., ed. 2, 2: 751. 1841; Schau. in A. DC., Prodr. 11: 544. 1847; Schau. in Mart., Fl. Bras. 9: 193--194. 1851; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; Chod., Bull. Herb. Boiss., sér. 2, 2: 818. 1902; Chod., Plant. Hassler. 197. 1902; Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 294. 1904; Herter, Florula 106. 1930; Herter, Revist. Sudam. Bot. 4: 186--187. 1937; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 41, 44, & 102. 1942; Augusto, Fl. Rio Grande do Sul 213 & 233. 1946; Moldenke, Alph. List Cit. 1: 171 & 266 (1946), 2: 358, 444, 458, 532, & 533 (1948), 3: 688, 745, 772, 781, 782, 840, 876, 921, & 922 (1949), and 4: 1238, 1249--1251, & 1257. 1949; Cabrera, Lilloa 20: 175. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94, 99, 100, & 200. 1949; Stellfeld, Trib. Farmac. 19 (10): 167. 1951; Moldenke, Phytologia 4: 188. 1953; Rambo, Sellowia 6: 60, 84, & 153 (1954) and 7: 260. 1956; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Résumé 111, 118, 120, 128, 376, & 474. 1959; Angely, Fl. Paran. 16: 79 (1960) and 17: 47. 1961; Reitz, Sellowia 13: 67 & 110. 1961; Moldenke, Phytologia 8: 197 & 198. 1962; Moldenke, Résumé Suppl. 6: 11. 1963; Moldenke, Phytologia 9: 386 (1963), 9: 501 (1964), 10: 93 (1964), and 11: 274. 1965.

Slender shrublet, subcanescent-strigose throughout, sometimes resembling Thymus vulgaris or Satureja montana in habit, at other times resembling a Galium; stems slender, strict, ascending or erect, to 31 cm. tall, tetragonal, fastigiate above; leaves sessile, tripartite to the base, sometimes short, at other times much larger, the divisions linear, 8--25 mm. long, very narrow, sharply acute at the apex, revolute along the margins, the lateral ones bifid or entire; spikes sometimes subsessile, at other times more or less short-pedunculate, mostly few-flowered, capitate when young, soon becoming oblong and rather loose; bractlets ovate-lanceolate, 1/3 to 1/2 as long as the calyx, acuminate at the apex; flowers small; calyx subequally tubular, about 4 mm. long, colored, densely appressed-strigose, with scattered fuscous very shortly stipitate glands, the teeth subulate, slightly unequal; corolla varying from blue, blue-violet, pale blue-violet, or light blue-violet to violet or lilac, exiguous, the tube scarcely equaling the calyx, the limb puberulous, villous within, barbate at the mouth, its lobes narrowly cuneate, emarginate at the apex; stamens inserted in the throat of the corolla-tube; filaments very

short; upper anthers appendaged, the connective scarcely produced, with an inconspicuous subturgid gland on the back; fruit 2 mm. long; cocci fuliginous, striate on the back, slightly reticulate-areolate above, the commissural surface angulate and tannish-white.

This species is based on collections made by Friedrich Sellow (nos. 1482, 4769, and s.n.) in "Brasilia meridionalis" and were deposited in the herbarium of the Botanisches Museum at Berlin, but are now unfortunately destroyed. The V. thymoides of Chodat is V. balansae Briq., while that of Philippi is Junellia minutifolia (R. A. Phil.) Moldenke.

Verbena thymoides has been collected on rocky slopes and campos, sandy and dry grassy campos, in wet and grassy places, grassy fields and pinewoods, and at the top of mountains, at altitudes of 500 to 1200 meters, flowering from August to January, March, and June. Rambo collected it in a region of 2 meters rainfall, with rare snows, and a temperature of 0—25°. Rosengurtt found it frequent in pedregal. Schauer (1851) says of it "modo caulibus spithamaeis pedalibus strictis Thymo vulgari vel Saturejae montanae quodammodo similis, modo caulibus elongatis flaccidis magis Galium quoddam referens." The flowers are described as "blue" on Sellow s.n.; as "blue-violet" on Rosengurtt B.4926; as "light blue-violet" on Osten 6594; as "violet" on Berro 4755, Herter 1145, and Rambo 49549; and as "lilac" on Hatschbach 3373.

Material has been misidentified and distributed in herbaria as V. balansae Briq. and as V. tenera Spreng. On the other hand, the Osten 11638, 22375, 22375a, & 22375b, distributed as typical V. thymoides, all seem to represent f. albiflora Moldenke, while Dusén 10847 & 16907, Jörgensen 4582, and Pedersen 2906 are V. balansae Briq.

Schauer (1847, 1851) cites Riedel s.n. from "Brasilia meridionalis" and from "campis graminosis ad Araracoara, prov. S. Pauli, Febr.—Majo", deposited in the herbarium at Leningrad.

Briquet (1904), in his discussion of the closely related V. balansae Briq., compares the species as follows: "Cette gracieuse espèce se place immediatement a côte du V. thymoides Cham. dont elle possède les feuilles divisées jusqu'a la base en 3 segments linéares: elle s'en distingue par son calice longuement et étroitement tubuleux, et non pas brièvement campanule-tubuleux. La longueur du calice (dents comprises ne dépasse guère 4 mm. dans V. thymoides dont nous avons vu un original de Chamisso à l'herbier DC.) Le port nain et prostre du V. thymoides est aussi bien différent du port élancé fourni par le V. Balansae, mais nous donnons moins d'importance à ces caractères, vu la grande amplitude des variations attribuées par Chamisso a son V. thymoides au point de vue du port."

In all, 55 herbarium specimens, including type material of all

the names involved, and 9 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Dusén 8591 (S), 15177 (S), s.n. [Capivari, 21.10.1908] (S), s.n. [between Lago & Desvio Ribas, 2.12.1910] (S), s.n. [Desvio Ribas, 17/2/1911] (S); Hatschbach 500 (N), 3373 (Z); Herb. Mus. Nac. Rio de Jan. 46599 (N); Rambo 35725 (N); Tessmann s.n. [Herb. Mus. Paran. 2695] (N). Rio Grande do Sul: Moldenke & Moldenke 19679 (Es, Lg, N, Ot); Rambo 34725 (N, S), 37827 (N), 43564 (Go); Reitz 3312 (N); Saint-Hilaire C².1841 (N); Schreiner s.n. (Ja—46574). Santa Catarina: Rambo 49549 (S); Reitz C.1062 (Rd); Smith & Reitz 10265 (W—2249369). State undetermined: J. F. T. Müller 76 (P); Sellow 1482 [Macbride photos 17454] (Kr—photo of cotype, N—photo of cotype, N—photo of cotype, N—photo of cotype, Z—photo of cotype), 4769 (Vt—cotype), s.n. [Brasilia] (Br—cotype, F—photo of cotype, N—cotype, N—photo of cotype, Si—photo of cotype, Ut—cotype, Z—photo of cotype). PARAGUAY: Hauthal 26 (N). URUGUAY: Arechavaleta 29, in part (N, Ug); Berro 4755 (N); Collector undetermined s.n. (Ug, Ug); Feague 1219 (Ug); Herter 1145 [Herb. Herter 83920] (Ca—360219, N), s.n. [Penitente, March 17—22, 1924; Herb. Osten 16998] (Ug); Herb. Herter 83788 (N); Legrand 1578 (Ug), 2573 (Ug), 2804 (Lg), 3376 (Ug), 3559 (Ug); Montoro Guarch 588 (N); Osorio s.n. [Valle Eden, Feb. 19, 1947] (Ug—13878); Osten 6594 (Ug); Rosa-Mato 571 (Ug—9816); Rosengurtt B.4926 (Ml, N, S). ARGENTINA: Misiones: Ekman 2021 (S), 2022 (S); Niederlein 539 (Ra—23607).

VERBENA THYMOIDES f. ALBIFLORA Moldenke, Phytologia 3: 178. 1949.

Bibliography: Moldenke, Phytologia 3: 178. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 100 & 200. 1949; Moldenke, Résumé 120, 421, & 474. 1959; Moldenke, Phytologia 8: 198. 1962.

This form differs from the typical form of the species in having white corollas. The flowers are described as being fragrant or even very fragrant.

The type of the form was collected by José Arechavaleta at Cerro de Nico Perez and Sierra de Tapambai, in the department of Minas, Uruguay, in November or December, 1892, and is deposited in the Osten Herbarium at the Museo de Historia Natural in Montevideo.

The form has been collected in rocky places, on rocky hills and mountains, stony cliffs, and campos in granitic soil with full exposure to the sun, at an altitude of 300 meters, flowering from September to November. Material has been misidentified and distributed to herbaria as V. balansae Briq. and as typical V. thymoides Cham.

In all, 15 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: URUGUAY: Arechavaleta s.n. [Cerro de Nico Perez & Si-

erra de Tapambai, Nov.-Dec. 1892; Herb. Osten 3752] (Ag—photo of type, F—photo of type, N—isotype, N—photo of type, Ug—type, Z—photo of type), s.n. [Cerro de Nico Perez, Dec. 1892; Herb. Osten 3751] (Ug); Berro 1055 (N), s.n. [Franqueras, Oct. 1900; Arechavaleta 29, in part] (Ug, Ug); Herter 1145a [Herb. Herter 86120] (N); Montoro Guarch 2905 (N); Osten 11638 (Ug, Ug), 22375 (N, S, Ug), 22375a (Ug), 22375b (Ug).

VERBENA TOMOPHYLLA Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1061—1062. 1904.

Synonymy: Verbena incisa Chod. ex Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1061, in syn. 1904 [not V. incisa Hook., 1839, nor Hort., 1947].

Bibliography: Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1061—1062. 1904; Briq. in Chod. & Hassler, Plant. Hassler. 10: 484. 1904; Prain, Ind. Kew. Suppl. 3: 187. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41, 44, & 102. 1942; Moldenke, Alph. List Cit. 1: 263 (1946), 2: 375 & 599 (1948), and 3: 662 & 693. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99, 107, & 200. 1949; Moldenke, Phytologia 3: 290. 1950; Moldenke, Résumé 118, 128, 367, & 474. 1959; Moldenke, Phytologia 9: 361, 365, 367, & 397 (1964) and 10: 97 & 108. 1964.

Tall herb. to 1 m. tall; stems robust, erect, green, somewhat angled, branched, sparsely short-pilose; branches ascending; middle internodes 3—6 cm. long; leaves decussate-opposite, petiolate; petioles to 1 cm. long, shorter than the leaf-blade, antrorsely pilose-hirtous; leaf-blades ovate in outline, 4—5 cm. long, about 2.5 cm. wide, subacute or obtuse at the apex, pinnately lobed, cuneate at the base and prolonged into the petiole, green on both surfaces, glabrescent above, sparsely pilose beneath especially along the veins, the lobes few, coarsely incised-crenate, the sinus between the lowest lobes to 1.5 cm. deep; principal veins somewhat prominulous beneath, hardly visible above; spikes short, terminal, to 4 cm. long and 1.5 cm. wide exclusive of the corollas, more or less pedunculate, the flowers congested; bractlets lanceolate, 5—6 mm. long, somewhat shorter than the calyx, acuminate at the apex, pubescent on the back, rather long-ciliate along the margins; calyx tubular, about 8 mm. long, antrorsely densely pubescent, enlarged urceolate at maturity, the tube 6 mm. long, the mouth noticeably oblique, the teeth subulate, the anterior ones longer, 1.5 mm. long, the posterior ones shorter, less than 1 mm. long, all finally connivent; corolla medium in size, rose or vivid-rose to violet or purple, 3—4 mm. longer than the calyx, pubescent on the outside, the tube cylindric, exserted, equal, the limb patulous, about 5 mm. wide, its lobes obcordate, the larger ones 1.5 mm. long and 2—2.5 mm. wide; stamens and pistil included; style incrassate toward the apex, somewhat bilobed, surpassing the calyx-teeth by 3 mm. after anthesis; cocci sublinear-oblong, sordid yellowish-green, 2.5 mm. long and 0.8 mm. wide, elevated-reticulate on the outside.

The type of this species was collected by Emil Hassler (no.

3295) in thickets at Caraguatay, Paraguay, in October, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques in Geneva, where it was photographed by Macbride as his type photograph no. 24700. The species has been found in grassy places, on campos, in thickets, and "common" among trees, at 50 meters altitude, flowering from September to November and in March. The flowers on Hassler 3295 are described as "rose", on Jörgensen 2636 as "vivid-rose", on Grtner 115 as "purple", and on Jörgensen 3769, Lillo 8577, and Rojas 1382 as "violet".

Material has been misidentified and distributed in herbaria under the names V. calliantha Briq., V. erinoides Lam., V. hasslerana Briq., and V. incisa Hook. Jörgensen 3769 is actually a mixture with V. hasslerana Briq.

Briquet (1904) says: "M. Chodat a avec raison fait soivre sa détermination de la restriction 'affinis, an diversa?' En effet, si le V. tomophylla se rapproche quelque peu du V. incisa par ses feuilles incisées, il en diffère notablement par des caractères plus importants: les inflorescences nettement spiciformes [et non pas en capitules corymbiformes. 'broad depressed (not. spiked) corymbs' (Hook. Bot. Mag. tab. 3628)], les bractées étroitement lancéolées un peu plus courtes que le calice (ovées, quatre fois plus courtes que le calice dans V. incisa), les dents calicinales subulées (courtes et simplement acuminées dans le V. incisa), enfin par la corolle beaucoup plus petite, simplement pubescente extérieurement (deux à trois fois plus grande, à limbe étalé mesurant 1,5 cm. de diamètre, et glanduleuse extérieurement dans le V. incisa). En réalité, le V. tomophylla n'appartient pas à la même section (Verbenaca) que le V. incisa: il se place dans la section Glandularia, à côte du V. Aubletia L. de l'Amérique du Nord, dont il est très voisin et dont il se sépare par son calice dépourvu de glandes stipitées, et sa corolle pubescente extérieurement deux fois plus petite. Les appendices glanduliformes des deux anthères supérieures, sans être saillants extérieurement, sont cependent très nettement développés."

In all, 12 herbarium specimens and 4 mounted phototypes have been examined by me.

Citations: PARAGUAY: Hassler 3295 [Macbride photos 24700] (Kr—photo of type, N—photo of type, N—photo of type, Qu—photo of type); Jörgensen 3769, in part [Herb. Osten 22249] (N, S, Ug); T. Rojas 1382 [382; Herb. Osten 7900] (N, Ug). ARGENTINA: Formosa: Jörgensen 2636 [Herb. Osten 14552; Herb. Inst. Miguel Lillo 31373] (N, N, Ug, W—1065616). Misiones: Grtner 115 [Herb. Osten 23176] (Ug). Tucumán: Lillo 8577 [Herb. Inst. Miguel Lillo 31568] (N); Venturi 2651 (W—1591262).

xVERBENA TORPA Moldenke, Phytologia 5: 133. 1955.

Synonymy: Verbena urticifolia x neomexicana Dermen, Cytologia 7: 170. 1936. Verbena neomexicana (A. Gray) Small x V. urticifolia

L. ex Moldenke, Résumé 370, in syn. 1959. Verbena urticifolia L. x V. neomexicana (A. Gray) Small ex Moldenke, Résumé 377, in syn. 1959.

Bibliography: Dermen, Cytologia 7: 170. 1936; Moldenke, Phytologia 3: 468 (1951) and 5: 133. 1955; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 362. 1958; Moldenke, Résumé 224, 370, 377, & 474. 1959; Moldenke, Phytologia 8: 121 (1961) and 10: 178. 1964.

This is the hybrid between V. urticifolia L. and V. neomexicana (A. Gray) Small, produced artificially by Dermen in Massachusetts in 1936. The two parental species do not grow together naturally anywhere, as far as I am aware, although both occur in Texas and a variety of V. neomexicana has been found as a waif in Baltimore, Maryland, where V. urticifolia is common. It is not very probable that this hybrid will ever be found in the wild unless the two parental species invade each other's territory in the future.

VERBENA TOWNSENDII Svenson, Am. Journ. Bot. 22: 253—254 & 271, pl. 3, fig. 1 a—d. 1935.

Bibliography: Svenson, Am. Journ. Bot. 22: 253—254 & 271, pl. 3, fig. 1 a—d. 1935; A. W. Hill, Ind. Kew. Suppl. 9: 295. 1938; Worsdell, Ind. Lond. Suppl. 2: 486. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 34 & 102. 1942; Moldenke, Castanea 13: 116. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 86. 1948; Moldenke, Alph. List Cit. 4: 982. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 71 & 200. 1949; Moldenke, Résumé 81 & 474. 1959.

Illustrations: Svenson, Am. Journ. Bot. 22: 271, pl. 3, fig. 1 a—d. 1935.

Glabrous erect herb, to 1 m. tall; stems tetragonal, about 3 mm. in diameter; principal internodes 5—7 cm. long; branches rigid, suberect, paniculate; leaves decussate-opposite, deeply trifid; petioles similar to the leaf-segments, 1—2 cm. long; leaf-blades with linear segments, 1—4.5 cm. long, about 1 mm. wide, revolute along the margins; spikes elongate, to 20 cm. long, borne at the apex of the branchlets, erect, filiform, the lower flowers becoming remote, often separated at maturity of the fruit by a space of 15 mm.; bractlets ovate, about 2.6 mm. long, acuminate at the apex, apparently about 2/3 as long as the calyx, ciliate along the margins, otherwise glabrous; pedicels about 0.5 mm. long; flowers very small; calyx about 2.7 mm. long; corolla small, lilac or lavender, twice as long as the calyx-tube, bearded in the throat, the limb 5-parted, the lobes 1.5 mm. long, the 3 lower ones slightly emarginate at the apex; stamens 4, didynamous; anthers broadly elliptic, 0.3 mm. long, equaling or longer than the filaments; filaments filiform, 0.1—0.3 mm. long; style bilobed; fruiting-calyx tetragonal, glabrous or rarely somewhat strigose, 4 of the teeth with incurved plicate tips slightly surpassing the fruit, the fifth (dorsal and innermost) tooth shorter and not curved; cocci 4, brown, 1.5 mm. long, prominently venose on the outer surface, white-roughened on the com-

missural surface.

The type of this species was collected by Henry Knute Svenson (no. 249) in gravelly soil below the escarpment, at an altitude of 50 feet, Academy Bay, on Indefatigable Island, Galapagos Islands, on April 10, 1930, and is deposited in the herbarium of the Brooklyn Botanic Garden. The collector notes that "It differs from V. littoralis in its glabrous character, narrow leaf segments, broader bracts, and more remote flowers." It is named in honor of Charles Haskins Townsend (1859--1944), American zoologist, director of the New York Aquarium, who collected plants in Alaska and on the Galapagos Islands. This endemic species is known only from the type collection and has been collected in anthesis in April. Svenson cites also Stewart 3317, 3318, and 3319 from Albemarle Island, but the first of these is regarded by me as V. glabrata H.B.K. and the last two as V. galapagosensis Moldenke.

In all, 2 herbarium specimens and 3 mounted photographs of the type collection have been examined by me.

Citations: GALAPAGOS ISLANDS: Indefatigable: Svenson 249 (F--photo of isotype, Gg--237859--isotype, N--isotype, N--photo of isotype, Si--photo of isotype, Z--photo of isotype).

VERBENA TRACHEA R. A. Phil., Anal. Univ. Chile 90: 609. 1896.

Synonymy: Verbena traquea R. A. Phil. ex Moldenke, Résumé 377, in syn. 1959.

Bibliography: R. A. Phil., Anal. Univ. Chile 90: 609. 1896; Durand & Jacks., Ind. Kew. Suppl. 1: 451. 1906; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 42 & 102 (1942) and [ed. 2], 102 & 200. 1949; Acevedo de Vargas, Bol. Mus. Nac. Hist. Nat. Chile 25: 68. 1951; Moldenke, Résumé 122, 377, & 474. 1959; Muñoz Pizarro, Espec. Plant. Descr. Philipp. Ill. 1960; Moldenke, Phytologia 10: 137. 1964.

Suffruticose herb, low, much branched, hirtous, with short spreading hairs most dense on the branches; stems about 20 cm. long; leaves usually as long as the internodes, 2.3 cm. long and 1.8 cm. wide, tripartite, the segments almost always bifid or trifid, obtuse at the apex, revolute along the margins; peduncles elongate; spikes elongating after anthesis to 4 cm.; bractlets ovate-lanceolate, hispid, carinate, about half as long as the calyx; calyx 7 mm. long, hispid especially on the ribs, almost pectinate, the rim with very short triangular teeth; corolla twice as long as the calyx, glabrous on the outer surface; cocci to 3.5 mm. long.

The type of this little-known species was collected by Christian Ludwig Landbeck in the Cordillera de Colchagua, at an altitude of 2000 meters, Colchagua, Chile, in December, 1861, and is deposited in the herbarium of the Museo Nacional de Historia Natural at Santiago. Philippi says (1896) "La V. radicans difiere por ser mui lampiña etc., la microphylla Kth. por sus hojas mui pequeñas, del largo de solo 7 millímetros, sus espigas en cabezu-

ela, etc." He places V. trachea in the section Glandularia of the genus. Only a single photograph of the type collection has been seen by me thus far.

Citations: CHILE: Colchagua: Landbeck s.n. [Herb. Mus. Nac. Hist. Nat. Chile 42515 & 54732] (N--photo of type & isotype).

xVERBENA TRANSITORIA Moldenke, Phytologia 5: 133. 1955.

Synonymy: Glandularia laciniata x G. megapotamica Schnack & Covas, Revist. Argent. Agron. 12: 222 & 224. 1945. Glandularia laciniata x megapotamica Covas & Schnack ex Moldenke, Phytologia 5: 133, in syn. 1955. Verbena megapotamica Spreng. x V. tenuisecta Briq. ex Moldenke, Résumé 369, in syn. 1959. Verbena tenuisecta Briq. x V. megapotamica Spreng. ex Moldenke, Résumé 376, in syn. 1959.

Bibliography: Schnack & Covas, Revist. Argent. Agron. 12: 222 & 224. 1945; Schnack & Gonzalez, Revist. Argent. Agron. 12: 290. 1945; Moldenke, Phytologia 3: 467 (1951) and 5: 133. 1955; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 362. 1958; Moldenke, Résumé 224, 296, 369, 376, & 474. 1959; Moldenke, Résumé Suppl. 2: 12. 1960; Moldenke, Phytologia 8: 12 (1961) and 10: 133. 1964.

This is the hybrid between V. tenuisecta Briq. and V. megapotamica Spreng. produced artificially by Covas & Schnack in Argentina in 1945. The two parental species grow together in Paraguay, Uruguay, two states of Brazil, and one province of Argentina, so it is possible that this hybrid may be found in the wild in these areas. It should have considerable horticultural merit and deserves further study and experimentation. Schnack & Covas apparently misidentified the one parent as V. laciniata (L.) Briq. instead of V. tenuisecta, and I mistakenly accepted their misidentification in my earlier references to this plant.

VERBENA TRIFIDA H.B.K., Nov. Gen. & Sp. Pl. 2: 273, pl. 134. 1817.

Synonymy: Verbena trifida Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 749. 1825. Verbena trifida Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 751. 1841. Verbena trifida Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 604. 1843. Verbena trifida Kunth ex Schau. in A. DC., Prodr. 11: 539. 1847. Verbena trifidi Kunth ex Moldenke, Alph. List Invalid Names 51, in syn. 1942.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 273, pl. 134. 1817; Steud., Nom. Bot., ed. 1, 874. 1821; Spreng. in L., Syst. Veg., ed. 16, 2: 749. 1825; Steud., Nom. Bot., ed. 2, 2: 751. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; Benth., Pl. Hartweg. 245. 1846; Schau. in A. DC., Prodr. 11: 539. 1847; Paxt., Fl. Gard. 1: 169. 1850--1851; Lem., Jard. Fl. 1: Misc. 85. 1851; Stapf, Ind. Lond. 6: 431. 1931; Perry, Ann. Mo. Bot. Gard. 20: 342 & 356. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 102. 1942; Moldenke, Alph. List Invalid Names 51. 1942; Moldenke, Alph. List Cit. 1: 131 & 132 (1946), 2: 557 (1948), and 4: 1005 & 1074. 1949; H. N.

& A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 14. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 62 & 200. 1949; Moldenke, Phytologia 3: 451. 1951; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2213. 1951; Moldenke, Résumé 40, 69, 377, & 474. 1959; Moldenke, Résumé Suppl. 4: 20. 1962; Moldenke, Phytologia 9: 33 & 39 (1963) and 10: 140. 1964; Moldenke, Résumé Suppl. 8: 3 & 6. 1964.

Illustrations: H.B.K., Nov. Gen. & Sp. Pl. 2: pl. 134. 1817; Paxt., Fl. Gard. 1: 169. 1850—1851; Lem., Jard. Fl. 1: Misc. 85. 1851.

Shrubby, to 1 m. tall, canescent throughout; branches tetragonal, clustered in the leaf-axils, hirsutulous; leaves decussate-opposite, clustered, sessile, 1.5--2.5 cm. long, trifid or nearly so, cuneate at the base, strigose-hispidulous on both surfaces, the segments lanceolate, acuminate at the apex, revolute-margined, the central one larger, entire or sometimes laciniate, one or the other of the lateral ones obsoletely bifid or entire, the midrib impressed above, prominent beneath; spikes terminal, numerous, subsessile, short, conglomerate-capitate, very dense, hirsutulous; bractlets lanceolate, about equaling the calyx; calyx tubular, about 6 mm. long, nervose, conspicuously 5-parted, the laciniations conspicuous, subulate, subequal or slightly unequal; corolla purple or pale-violet, medium in size, its tube slightly longer than the calyx, the lobes of the limb rounded, emarginate at the apex.

The type of this perplexing species is said to have been collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland between the village of Atotonilco and the natural bridge called Puente de Dantoe or Santa Virginia ["Totonilco-el-Grande, Dantae, S. Virginia"], Hidalgo, Mexico, at an altitude of 1800 feet. Dr. M. Martínez, in a letter to me dated December 14, 1950, localizes the so-called type locality as follows: "In the state of Hidalgo -- locate the city of Pachuca, then draw a line to the northeast and you will find Atotonilco el Grande or simply Atotonilco (not Totonilco as you spelled it). Then draw a line to the west to Actopan. On this line, and not far from Atotonilco is a small town named Sanctorum, and there is a river named Amajac. On this river is the Puente de Dantoe or Puente de Dios, a natural bridge 80 meters high. Santa Virginia is just a small village in the region."

It seems hardly probable that this distinctive plant should occur only in Hidalgo, Mexico, and then again in two states of Colombia, and not in the intervening areas. Inasmuch as it has not again been found in Mexico, it seems probable that the Mexican locality is the result of an error in labeling on the part of Humboldt and Bonpland. I suspect that the species is endemic to Colombia and that the type came from there, too. The species is said to have been introduced into cultivation in England in 1818 as a greenhouse plant and is described as "a curious plant". It has been found in Colombia at altitudes of 1800 to 3750 meters, flowering in March, July, and September. A vernacular name recorded for it is "sinamomo". Schauer (1847) cites Humboldt &

Bonpland s.n. and Hartweg 1353 from the Kunth and Berlin herbaria.

In all, 10 herbarium specimens and 1 mounted illustration have been examined by me.

Citations: COLOMBIA: Boyacá: Cuatrecasas 1247 (W--1772927), 1720 (W--1773116); Linden 1294 (F--876775). Cundinamarca: Apollinaire & Arthur 4 (W--603087); Hartweg 1353 (Lu, N); Holton s.n. [Bogota] (T); Huertas & Camargo 733 (F--1291995); Triana 2057 (Br, N). MOUNTED ILLUSTRATIONS: Fig. 103 (N).

VERBENA TRIFIDA var. DESERTICOLA Moldenke, Phytologia 3: 281. 1950.

Bibliography: Moldenke, Phytologia 3: 281 & 290. 1950; Moldenke, Résumé 122 & 474. 1959.

This variety differs from the typical form of the species in being a more branched and diffuse plant, with more slender and much weaker branches, and with the divisions of the leaves uniformly oblong or linear, 1--3 mm. wide, and more obtuse at the apex.

The type of the variety was collected by Ernesto Barros Valenzuela (no. 8010) at Quebrada La Chimba, Antofagasta, Chile, on September 20, 1940, and is deposited in the Britton Herbarium at the New York Botanical Garden. The variety is known to me thus far only from the type specimen.

Citations: CHILE: Antofagasta: Barros Valenzuela 8010 (N--type).

xVERBENA TRINITENSIS Moldenke, Résumé Suppl. 3: 14, 37, 39, & 41, hyponym (1962), nom. nov.

Synonymy: Verbena peruviana var. subbipinnatisecta Kuntze, Rev. Gen. Pl. 3 (2): 257. 1898. Verbena tenera x incisa x erinoides Hegi, Illustr. Fl. Mittel-Eur. 5 (3): 2240, in textu. 1927. Verbena briquetiana x tenuisecta Briq. ex Moldenke, Résumé 360, in syn. 1959. Verbena chamaedryfolia x subbipinnatisecta Kuntze ex Moldenke, Résumé 362, in syn. 1959. Verbena incisa Hook. x V. tenuisecta Briq. ex Moldenke, Résumé Suppl. 3: 39, in syn. 1962. Verbena tenuisecta Briq. x V. incisa Hook. ex Moldenke, Résumé Suppl. 3: 41, in syn. 1962.

Bibliography: Kuntze, Rev. Gen. Pl. 3 (2): 257. 1898; Hegi, Illustr. Fl. Mittel-Eur. 5 (3): 2240. 1927; Moldenke, Alph. List Cit. 2: 628. 1948; Moldenke, Résumé 360 & 362. 1959; Moldenke, Phytologia 8: 121 (1961) and 8: 419. 1962; Moldenke, Résumé Suppl. 3: 14, 37, 39, & 41 (1962), 4: 19 (1962), and 5: 6--8. 1962; Moldenke, Phytologia 9: 366 (1964) and 11: 271 & 279. 1965.

The type of this hybrid was collected by Carl Ernest Otto Kuntze at Trinidad, in southern Paraguay, and is deposited in the Britton Herbarium at the New York Botanical Garden. I regard the plant as a natural hybrid between V. incisa Hook. and V. tenuisecta Briq.

Osten, in a memorandum written at Montevideo in January, 1931, says "Wie von OK angeführte V. chamaedryf. var. subbipinnatisecta

OK, wegen der sich Briquet den Kopf zerbricht ist der spontan Bastard: Verbena [Nobiles, chamaedryf.] Briquetiana (rot) x [Glandularia, erinoides] tenuisecta (violett) Briq. mit rosa Blüten, den auch ich loco classico bei Trinidad zwischen den Eltern traf (auch sonst in Paraguay nicht selten)."

Hegi (1927) says that this hybrid has given rise in gardens to "bunte Blumisten Verbenen" and "italienische Blumisten Verbenen" forms. These, however, are what we now usually regard as V. tenera var. maonetti Regel, and are quite different morphologically from Kuntze's and Osten's plants.

Only the type specimen has been examined thus far by me.

Citations: PARAGUAY: Kuntze s.n. [Trinidad, Std Paraguay] (N--type).

VERBENA TRISTACHYA Troncoso & Burkart, Darwiniana 7: 208--215, fig. 1, 2 c--p, & 3. 1946.

Synonymy: Glandularia tristachya (Tronc. & Burk.) Schnack & Covas, Bol. Soc. Argent. Bot. 1: 284. 1946.

Bibliography: Troncoso & Burkart, Darwiniana 7: 208--215, fig. 1, 2 c--p, & 3. 1946; Schnack & Covas, Bol. Soc. Argent. Bot. 1: 284 & 287. 1946; Moldenke, Phytologia 2: 339. 1947; Moldenke, Castanea 13: 119. 1948; Moldenke, Alph. List Cit. 4: 1192 & 1257. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 107 & 200. 1949; Schnack & Covas, Revist. Argent. Agron. 18: 107--108, fig. 1 G & H. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 101 & 263. 1953; Moldenke, Résumé 128, 296, & 474. 1959; Moldenke, Résumé Suppl. 2: 13. 1960; Moldenke, Phytologia 9: 381 (1964), 11: 186 (1964), and 11: 271. 1965.

Illustrations: Troncoso & Burkart, Darwiniana 2: 209, fig. 1, 211, fig. 2 c--p, & 213, fig. 3. 1946; Schnack & Covas, Revist. Argent. Agron. 18: 107--108, fig. 1 G & H. 1951.

Glabrous branched herb, probably biennial, erect, to 70 cm. tall, hygrophilous; root perpendicular, medium in size, with abundant fibrous superficial branches which extend from the crown and from the decumbent portion of the stem, with abundant adventitious hairs; stems short-decumbent at the base (the decumbent portion to 8 cm. long), the remainder erect, conspicuously fistulose, cylindric or obsoletely tetragonal, 2.5--5 mm. in diameter, glabrous, with the 4 angles somewhat prominulent throughout, smooth, not scabrous, more slender above and longitudinally 2-canaliculate; principal internodes rarely to 10 cm. long; leaves decussate-opposite, herbaceous, of the same color on both surfaces, lanceolate, 3.5--9 cm. long, 0.4--1.4 cm. wide, the upper ones linear and smaller, 2--4 cm. long and 2--4 mm. wide, all acute at the apex, attenuate to the sessile base, not auriculate, unequally and coarsely serrate-dentate along the margins with 4--7 unequal acute teeth, the upper ones obscurely dentate or entire, glabrous except for the more or less recurved margins which are sparsely short-pilose; midrib discernible above, prominent beneath; secondaries pinnate, small, discernible above, prominent

beneath; inflorescence dichasial; spikes terminal, biparous, mostly 3, rarely 1 (on less vigorous shoots) or up to 7 (on very vigorous branches), pedunculate, subcylindric, dense-flowered, 1.8--2 cm. long during anthesis and 7--8 mm. wide, elongate to 7 cm. after anthesis, forming secondary lateral groups at the ends of lateral branches on very vigorous shoots, separated by leaves from the terminal group; flowers 7--8 mm. long; bractlets lanceolate, persistent, 3.5--6 mm. long, ciliolate; calyx tubular, 5.5-6.5 mm. long, green, 5-costate, sparsely short-pilose on the veins, otherwise subglabrous, the rim 5-dentate, 4 of the teeth subequal, the 5th one very small; corolla violet, infundibular, its tube 6.5--7.5 mm. long, slightly surpassing the calyx, puberulent on the exserted portion outside, sparsely pilose throughout within, densely so at the throat, the limb exiguous, 2--2.5 mm. in diameter, the 5 lobes radiate, subequal, glabrous, obscurely emarginate at the apex; stamens 4, didynamous, inserted in the upper part of the corolla-tube; filaments short; thecae ovate, separate; style filiform, 6--7.5 times as long as the ovary, bilobed at the apex; stigma short, obtuse; ovary glabrous, 4-celled; mature fruit separating into 4 1-seeded schizocarps at maturity; cocci achene-like, subcylindric, dark-nigrescent, 3--3.5 mm. long, 0.6--0.7 mm. wide, striate below, reticulate on the back above; chromosome number: n = 5, 2n = 10.

The type of this species was collected by Arturo Erardo Burkart in "pajonal" opposite the port of San Nicolás on the Isla de las Lechiguanas, Delta Superior, Entre Ríos, Argentina, about 400 meters north of the mouth of the Río Paraná, on December 30, 1945, and is deposited in the herbarium of the Instituto Botanico Darwinion at San Isidro, Argentina. The type locality is described by Troncoso & Burkart (1946) as "pajonal típico de isla, de hierbas ásperas de 1,50--2 m. de altura, con estratos bajos muy escasos o nulos, con predominio notable de Aspilia sylphioides (Hook. & Arn.) Benth. & Hook., matas de Paspalum cfr. Haumani Parodi, muchas Compuestas, Labiadas, otras Gramíneas, Leguminosas, etc." They cite T. Meyer 2158 from Corrientes and comment "Verbena tristachya pertenece a la sección Verbenaca SCHAUER, caracterizada por carecer de glándulas anterales y a la serie Pachystachyae SCHAUER.....A esta serie emparentadas con la que acabamos de describer, a saber: V. stellarioides CHAM., con dos variedades, V. littoralis H.B.K., V. intermedia GILL. & HOOK., V. montevidensis SPRENG....., V. rigida SPRENG.....etc. De todas ellas es diferencia facilmente (sin entrar a considerar los caracteres florales distinton), por el tallo y por la inflorescencia. El tallos en ellas es marcadamente tetrágono, con los ángulos muy ásperos o escabrosos (excepto en V. stellarioides y V. montevidensis), mientras que en V. tristachya es cilíndrico u obscuramente tetrágono, completamente liso y glabro. En cuanto a la inflorescencia, V. littoralis, V. intermedia y V. montevidensis tienen inflorescencia multiespigada, mientras que V. stellarioides posee espigas terminales solitarias, rara vez hasta 2 ó 3 espigas por

vástago; en la nueva especie es típica una tríade de espigas. Puede formarse una serie de especies con progresivo aumento en el número de espigas por vástago: V. stellarioides (1--3 espigas), V. rigida (3), V. tristachya (1--7), V. intermedia, V. littoralis, V. montevidensis (infinitas). V. stellarioides, la más vecina de la nueva especie, se distingue además de ella por muchos detalles: inflorescencia capituliforme durante la antesis; internodio terminal (debajo de la espiga) visiblemente velloso; flores mucho mayores, con limbo amplio y extendido, tubo corolar exteriormente velloso-lanuginoso; brácteas muy subuladas, más largas que el cáliz, velloso-ciliadas; cáliz velloso en los ángulos. V. tristachya, por el contrario, posee inflorescencias espiciformes, internodio terminal glabro, flores menores con limbo reducido, corola apenas pubescente en la parte superior del tubo, brácteas menos subuladas, por lo general menores que el cáliz, pestañosas, y cáliz ligeramente pubescente. La difundida V. littoralis se diferencia por las espigas delgadas, de 3--4 mm. de diám. (en V. tristachya miden 6--8 mm. de diám.), flores de 4--5 mm., con el tubo corolar de 3,5--4 mm. de long., cáliz de 2,3--2,8 mm. de long., cubierto de pelitos breves uniformemente repartidos sobre su superficie, brácteas también menores, de 2--3 mm. de long. y pubescentes. En general, la planta se aparta al primer golpe de vista por lo muy ramificada, escabrosa en los tallos y multiespigada. V. intermedia, otre de las especies afines...se distingue, aparte de los rasgos ya comentados, por flores más grandes y vistosas, de color violáceo intenso, limbo corolar bien desarrollado, cáliz y brácteas con pelos glandulosos, estilo breve y estambres fijos en la mitad inferior del tubo corolar....Creemos interesante hacer notar que ningún autor cita el carácter fistuloso del tallo en el género Verbena. Tan es asi que en un principio creímos que éste era un carácter especifico de la nueva especie, pero al efectuar cortes en los tallos de las especies afines, pudimos observar que V. stellarioides posee también tallo completamente fistuloso, aunque de cavidad menor. En V. littoralis las ramas superiores y los tallos jóvenes son macizos, observándose que los tallos más gruesos y los entrenudos inferiores son algo fistulosos, pero con una gruesa capa de meédula. V. intermedia y V. montevidensis tienen los tallos macizos. El tallo fistuloso y glabro de V. tristachya puede interpretarse como de adaptación ecológica a las islas de suelo húmedo e inundable..... El estudio anatómico del tallo de V. tristachya presenta como característica interesante, que le capa de parénquima clorofiliano es continua, es decir, que no se halla interrumpida en los ángulos por la columna esclerenquimática. Esta última estructura caracteriza a V. littoralis y V. intermedia. Esta observación la hacemos pues SCHNACK y COVAS.....establecen como uno de los caracteres diferenciales para separar los géneros Verbena y Glandularia, la interrupción o continuidad, respectivamente, del parénquima cortical clorofiliano en el tallo. Otro carácter que los

mismos autores consideran también diferencial y que en esta especie no lo es, es la relación longitud del estilo a altura del ovario. SCHNACK y COVAS.....consideran que en Verbena el estilo es tan largo o hasta tres veces más largo que el ovario, en Glandularia, por el contrario, es varias veces más largo. En V. tristachya es de 6 a 7,5 veces más largo que el ovario, y en V. stellarioides es 10 veces y media mayor. Por los demás caracteres, en cambio, V. tristachya es una auténtica Verbena. Seria interesante para resolver este problema, efectuar el estudio citológico de la nueva especies, el cual no pudimos realizar aún porque las semillas no germinaron."

The species has been collected only in "pajonal" and on river banks, flowering in December. In all, 6 herbarium specimens, including the type, and 2 mounted photographs have been examined by me.

Citations: ARGENTINA: Lechiguanas Island [Entre Ríos]: Burkart 15644 (F--photo of type, It--isotype, N--isotype, N--photo of type, Si--type). Misiones: Ekman 2024 (Mi, N, S).

VERBENA TRITERNATA R. A. Phil., Anal. Univ. Chile 90: 615, pl. 1. 1895.

Synonymy: Verbena biternata R. A. Phil. ex Moldenke, Résumé 358, in syn. 1959.

Bibliography: R. A. Phil., Anal. Univ. Chile 90: 615, pl. 1. 1895; Durand & Jacks., Ind. Kew. Suppl. 1: 451. 1906; Reiche, Fl. Chile 3: 277 & 279. 1910; Stapf, Ind. Lond. 6: 431. 1931; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 42 & 102 (1942) and [ed. 2], 102 & 200. 1949; Acevedo de Vargas, Bol. Mus. Nac. Hist. Nat. Chile 25: 69. 1951; Moldenke, Résumé 122, 358, & 474. 1959; Muñoz Pizarro, Espec. Plant. Descr. Philipp. 111. 1960.

Illustrations: R. A. Phil., Anal. Univ. Chile 90: pl. 1. 1895.

Low hispid herb; branchlets apparently about 4.5 cm. long, the apical portion divided into very short twigs which are densely foliose, the lower portion about 1.25 mm. in diameter, with distant dry leaves; leaves extending slightly beyond the floral corymbs; petioles very short, about 3 mm. long, ampliate; leaf-blades semicircular in outline, biternately or triternately dissected, the larger ones about 9 mm. long and 13 mm. wide, the segments linear, about 3 mm. long, rounded at the apex; flowers sessile, terminal, forming a compact corymb; calyx turbinate or very narrowly funnelform, to 6 mm. long, very bristly on the upper portion, the teeth very short; corolla red, 1 1/2 times as long as the calux-tube, the limb equaling the diameter of the tube.

The type of this curious species was collected by Rudolf Amandus Philippi at La Cueva, in the Cordillera de la Araucanía, Arauca, Chile, in January, 1887, and is deposited in the herbarium of the Museo Nacional de Historia Natural at Santiago, Chile. The original publication is sometimes cited as "1896", apparently in error. Reiche (1910) says: "en las cordilleras de la Araucanía; parece planta escasa. Observacion. La V. triternata i V. digitata

son mui poco diferentes; el carácter distintivo fundado en la base del estilo debe comprobarse en muestras mas numerosas; en vista de las localidades nativas, distanciadas en 13 grados, no me atrevo reunir las dos especies." Only a photograph of the type has been seen thus far by me.

Citations: CHILE: Arauca: R. A. Philippi s.n. [La Cueva, Jan. 1887; Herb. Mus. Nac. Hist. Nat. Chile 54783] (N—photo of type).

VERBENA TUMIDULA Perry, Ann. Mo. Bot. Gard. 20: 322--323. 1933.

Bibliography: Perry, Ann. Mo. Bot. Gard. 20, 244, 245, 248, 311, 322--323, & 356. 1933; Cory, Texas Agr. Exp. Sta. Bull. 550: 89. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 295. 1938; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 13, 14, 19, & 102. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 18 & 38. 1942; Moldenke, Alph. List Cit. 1: 9, 32, 115, & 127. 1946; Moldenke, Wrightia 1: 231. 1948; Moldenke, Phytologia 2: 167. 1948; Moldenke, Alph. List Cit. 3: 708 & 798 (1949) and 4: 991 & 1212. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 24, 25, 33, & 200. 1949; Moldenke, Résumé 30, 31, 40, & 474. 1959; Moldenke, Phytologia 10: 92, 98, 102, & 104. 1964.

Herb; stems 15—20 cm. long, decumbent-ascending, branching, pilose-hirsute; leaves decussate-opposite; petioles margined; leaf-blades broadly ovate, 2—4 cm. long, cuneate at the base and narrowed into the petiole, trifid, with the segments again incised or coarsely crenate-dentate, appressed-pubescent or strigillose above, hirtellous beneath; spikes short-pedunculate, protruding slightly beyond the uppermost leaves, compact; bractlets ovate-lahceolate, not exceeding the calyx in length, acuminate at the apex, ciliate along the margins; mature calyx 8--9 mm. long, inflated at the base, hirsute, finely glandular, with subulate teeth about 1.5 mm. long; corolla purple-blue, the tube about 11 mm. long, puberulent on the outside, the limb 8--10 mm. wide; anthers not glandular-appendaged; cocci about 3 mm. long, the dorsal surface reticulate-scrobiculate, the lateral surfaces ventricose and smooth, the commissural face almost smooth.

The type of this species was collected by Ernest Jesse Palmer (no. 13512) at Barksdale, Edwards County, Texas, on May 7, 1918, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis. The type collection is inscribed "Real County" on the labels, but the locality is in Edwards County. The species is known from plains, blooming from May to November, on the Edwards Plateau and Trans-Pecos Area of western Texas from El Paso to Real and perhaps Bexar Counties. It has been collected in fruit in May, July, August, and November, at altitudes of 1225 to 2900 feet. Marsh says "flowering in spring". Cory 44509 consists of splendid specimens!

The C. Wright 455 cited below from El Paso County, Texas, is labeled "from W. Texas to El Paso, New Mexico", which means "from San Antonio to El Paso, Texas", and so the collection may actually have been made in one of several western counties of the state. The Collector undesignated s.n. cited below is from "Leon Spring" and

Dr. B. C. Tharp, in a letter to me, states that this is probably meant to be Leon Springs, in Bexar County -- it is annotated by Perry as V. delticola Small with a question.

C. Wright 1503 is a mixture with V. bipinnatifida var. latilobata Perry -- it was first identified as V. aubletia L., then as V. ambrosifolia Rydb. It may have been collected in western Texas instead of "N. Mexico" as stated on the label. E. F. Castetter, in a letter to me dated January 31, 1955, says that in twenty-seven years of botanical collecting in New Mexico he has never seen this species in that state.

Material of V. tumidula has been misidentified and distributed in herbaria under the names V. ambrosifolia Rydb., V. aubletia L., V. ciliata Benth., V. delticola Small, V. drummondii Baxt., V. lambertii Sims, and V. pumila Rydb.

Perry (1933) cites the following 3 additional specimens not as yet seen by me: TEXAS: Edwards Co.: E. J. Palmer 13512 (E--type). El Paso Co.: C. Wright 455 (G). NEW MEXICO: County undetermined: C. Wright 1503, in part (G). The C. Wright 1503 which she cites from "NY" is actually deposited in the Torrey Herbarium. She comments that "This species undoubtedly belongs to the section Glandularia, although apparently the anthers are glandless. Superficially, it resembles V. Gooddingii var. nepetifolia, but the spikes are not so large nor so showy. Its distinctive characters are the ventricose nutlets and the inflated fruiting calyx. The bracts, too, are broader and shorter than those of nearly related species of this group."

In all, 21 herbarium specimens, including material of the type collection, have been examined by me.

Citations: TEXAS: Bexar Co.: Collector undesignated s.n. [Plains near Leon Spring, Sept. 7, 1852] (N). Edwards Co.: Cory 38940 (N); E. J. Palmer 13512 (B--isotype, W--1603457--isotype); Parks & Cory 24483 (Tr), 26651 (Tr), 26826 (Tr). El Paso Co.: C. Wright 455 (W--56208). Real Co.: Cory s.n. [7-19-1936] (Md); G. L. Fisher 50103 (Ew, Gg--381246); Parks & Cory 19093 (Tr), 19094 (Tr); Tharp s.n. [Vance, 9/11/29] (Au). Uvalde Co.: Cory 44509 (Au). Val Verde Co.: Y. Anderson s.n. [Del Rio, Spr. 1921] (Wi). NEW MEXICO: County undetermined: C. Wright 1503, in part (T, W--71927). MEXICO: Coahuila: Marsh 150 (Au, Au). Tamaulipas: H. H. Bartlett 10030 (Mi).

VERBENA URTICIFOLIA L., Sp. Pl., ed. 1, 20. 1753.

Synonymy: Verbena peregrina, foliis urticae Dodart, Mém. Acad. Sci. Paris 4: 317. 1669. Verbena peregrina, foliis Vrticae Dodart, Mém. Acad. Sci. Paris 4: pl. 317. 1669. Verbena urticae folio Zanoni, Hist. Bot. 204, fig. 77. 1675. Verbena urticae folio, canadensis Tourn. apud P. Herm., Hort. Acad. Lugd.-Bat. Cat. 619, in syn. 1687. Verbena peregrina foliis urticae Dodart apud P.

Herm., Fl. Lugd.-Bat. 55, in syn. 1690. Verbena recta canadensis siue virginiana maxima urticae foliis J. Morison, Plant. Histor. Univ. Oxon. 3: sec. 11, pl. 25, fig. 3. 1699. Verbena americana urticae folio Dodart apud J. Morison, Plant. Histor. Univ. Oxon. 3: "408" [=418]. 1699. Verbena cretica urticae folio Zan. apud J. Morison, Plant. Histor. Univ. Oxon. 3: "408" [=418], in syn. 1699. Verbena urticaefolia canadensis Tourn., Inst. Rei Herb. 200. 1700. Verbena lamii folio Barrel., Plant. Gall. Hisp. 30, pl. 1146. 1714. Verbena urticaefolia, canadensis Tourn. apud Barrel., Plant. Gall. Hisp. 30, in syn. 1714. Verbena; canadensis; folio urticae Zanon. apud Boerh., Ind. Alt. Plant. Hort. Acad. Lugd., ed. 2, 1: 187. 1720. Verbena foliis ovatis, caule erecto, spicis filiformibus L., Hort. Cliff. 11. 1737. Verbena canadensis, folio urticae Boerh. apud L., Hort. Cliff. 11, in syn. 1737. Verbena recta canadensis seu virginiana maxima, urticae foliis Moris. apud L., Hort. Cliff. 11, in syn. 1737. Verbena foliis ovatis serratis, spicis filiformibus paniculatis A. van Royen, Fl. Leyd. Prod. 327. 1740. Verbena canadensis, folio urticae Zanon. apud A. van Royen, Fl. Leyd. Prod. 327, in syn. 1740. Verbena vrticaefolia canadensis Tourn. apud Michel, Cat. Plant. Hort. Caes. Florent. 98. 1748. Verbena foliis ovatis, caule erecto, spicis filiformibus paniculatis L., Sp. Pl., ed. 1, 20, in syn. 1753. Verbena recta canadensis, urticae foliis Moris. apud L., Sp. Pl., ed. 1, 20, in syn. 1753. Verbena tetrandra, spicis filiformibus paniculatis, foliis indivisis serratis petiolatis L., Sp. Pl., ed. 1, 20, in syn. 1753. Verbena tetrandra, spicis filiformibus paniculatis, foliis indivisis serratis petiolatis L. apud J. F. Gronov., Fl. Virg., ed. 2, 4. 1762. Verbena recta canadensis, s. virginiana maxima urticae foliis Moris. apud J. F. Gronov., Fl. Virg., ed. 2, 4, in syn. 1762. Verbena peregrina Dodart apud J. A. Murr. in L., Syst. Veg., ed. 13, 62, in syn. 1774. Verbena urticae folia, canadensis Tourn. apud Sabbat in Martelli, Hort. Roman. 3: 11, pl. 55. 1775. Verbena tetrandra, spicis filiformibus, paniculatis; foliis indivisis, ovatis, serratis, acutis, petiolatis L. apud Poir. in Lam., Encycl. Méth. Bot. 8: 548, in syn. 1808. Verbena foliis ovatis; caule erecto; spicis filiformibus, paniculatis L. apud Poir. in Lam., Encycl. Méth. Bot. 8: 548, in syn. 1808. Verbena (urticifolia), recta, foliis ovalibus seu ovali-lanceolatis, acutis; paniculis divaricatis; spicis filiformibus, distinctifloris Michx. apud Poir. in Lam., Encycl. Méth. Bot. 8: 548, in syn. 1808. Verbena recta, canadensis, urticaefoliis Moris. apud Poir. in Lam., Encycl. Méth. Bot. 8: 548, in syn. 1808. Veronica peregrina Dodart apud Poir. in Lam., Encycl. Méth. Bot. 8: 548,

in syn. 1808. Verbena diffusa Hort. ex Poir. in Lam., Encycl. Méth. Bot. 8: 550. 1808. Verbena urticaefolia L. ex Dum. Cours., Bot. Cult., ed. 2, 2: 623. 1811. Verbena diffusa Willd. ex J. Sm. in Rees, Cycl. 36: no. 18. 1817. Verbena diffusa Desf. ex Spreng. in L., Syst. Veg., ed. 16, 2: 748. 1825. Verbena tetrandra, spicis filif. paniculatis, fol. indivisis ovat. acut. serratis petiolatis L. apud H. E. Richter, Cod. Bot. Linn. 35. 1835. Verbena fol. ovatis, caule erecto, spic. filif. panic. L. apud H. E. Richter, Cod. Bot. Linn. 35. 1835. Verbena lamii fol. Barr. apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena recta canadensis, urticae fol. Moris. apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena peregrina, fol. urticae Dodart apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena urticae fol. canadensis Ray apud H. E. Richter, Cod. Bot. Linn. 35, in syn. 1835. Verbena peregrina, fol. urtic. Dodart apud Peterm., Cod. Bot. Linn. Ind. Alph. 196, in syn. 1840. Verbena recta canadensis etc. Moris. apud Peterm., Cod. Bot. Linn. Ind. Alph. 196, in syn. 1840. Verbena diffusa Lam. ex Eaton & Wright, N. Am. Bot., ed. 8, 470, in syn. 1840. Verbena recta canadensis urticae folio Moris. apud Walp., Repert. Syst. Bot. 4: 21, in syn. 1845. Verbena diffusa Poir. ex Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1178, in syn. 1895. Verbena urticifolia var. simplex Farwell, Papers Mich. Acad. Sci. 3: 103. 1924. Verbena urticifolia x simplex Gates, Fl. Kans. 191. 1940. Verbena hastata var. oblongifolia Andrews ex Moldenke, Suppl. List Invalid Names 8, in syn. 1941. Verbena urticafolia L. ex Moldenke, Suppl. List Invalid Names 10, in syn. 1941. Verbena urtricifolia L. ex Moldenke, Alph. List Invalid Names 51, in syn. 1942. Verbena urticaefolium L. ex Moldenke, Alph. List Invalid Names 51, in syn. 1942; E. J. Palmer, Handb. Nat. Hist. 297 & 663. 1949. Verbena urticifolia x stricta Gates (in part) ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947 [not V. urticifolia x stricta Eggert, 1937, nor Norton, 1958]. Verbena urticifolia var. urticifolia [Moldenke] in Gleason, New Britton & Br. Illustr. Fl., print. 1, 3: 129. 1952. Verbena urticaefolia var. hirsutior Engelm. ex Moldenke, Résumé Suppl. 3: 41, in syn. 1962. Verbena spicis longissimis, laxis, paniculatis, valdè diffusis; foliis ovato-lanceolatis, subpubescentibus, serratis; caule frutescente, subglabro Poir. ex Moldenke, Résumé Suppl. 4: 19, in syn. 1962. Verbena urticae folia canadensis Tourn. ex Moldenke, Résumé Suppl. 4: 20, in syn. 1962. Verbena urticifolia Gray & Small ex Moldenke, Résumé Suppl. 4: 20, in syn. 1962. Verbena imbricifolia McCann ex Moldenke, Résumé Suppl. 8: 5, in syn. 1964. Verbena urricaefolia L. ex Moldenke, Résumé Suppl. 8: 6, in syn.

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Erect annual or perennial herb, to 2.5 m. tall, coarse, often hispid; roots usually perennial; stems erect, solitary, simple below, often sparingly branched above from the upper nodes, stout, obtusely 4-angled, varying from more or less pubescent or rough-hairy with stiff spreading hairs to more or less hirtellous or al-

most glabrous, nearly all of the upper nodes producing perfect or rudimentary branches; branches axillary, decussate-opposite, upright or spreading, slender; leaves decussate-opposite, petiolate or the uppermost sessile, very frequently infested with leaf mildew; petioles slender, short, 2--4 cm. long, narrowly margined, rough-hirsute; leaf-blades very thin-membranous, dark-green on both surfaces, varying from ovate or broadly ovate to oblong, oblong-lanceolate, broadly lanceolate, oblong-ovate, or lance-ovate, 8--20 cm. long, acute or short-acuminate at the apex, mostly rounded at the base and decurrent into the petiole, coarsely serrate-dentate or serrate to somewhat doubly crenate-serrate with large rounded teeth which are minutely mucronulate at the termination of the veins, strongly venose, glabrous or more or less roughened or hirtellous with scattered long stiff hairs chiefly on the venation beneath, often minutely pustulate above, the hairs whitish, 1--1.3 mm. long; spikes numerous, paniculately disposed, usually clustered at or near the summit of the stems and branches and solitary in the upper axils, simple or branched, slender or filiform, green, interrupted, rather flaccid during anthesis, to 15 cm. long or longer, rather sparsely flowered, usually stiffly ascending and strigose when in fruit and remotely fruited; bractlets ovate-acuminate, very short, 1--1.5 mm. long, ciliate-margined; flowers small or minute, about 4 mm. long, separate or subopposite on the rachis, sessile; calyx tubular, 2--2.3 mm. long when mature, green, 5-ribbed, strigose or strigose-pubescent to minutely pubescent (especially along the veins), its lobes 5, triangular, about 2 mm. long, acute or obtuse, not connivent, the teeth short, subequal, subulate; corolla white, tubular or hypocrateriform, its tube curved, scarcely exserted from the calyx, pubescent, its limb 2--4 mm. wide, the throat closed by a ring of short coarse incurved hair, the lobes 5, small, short, blunt or rounded, the 2 upper ones smaller; stamens 4, in 2 pairs, inserted on or at the base of the corolla-tube; ovary superior, becoming 4-celled or rarely 2-celled; style single; stigma usually 2-lobed; mature schizocarp oblong, exposed at the distal end, 2--2.5 mm. long, obtuse at the apex, obtusely 4-angled; cocci mostly 4, narrowly oblong or ellipsoid, trigonous with a convex back, about 2 mm. long, pale-brown, more or less enclosed by the mature calyx, smooth or almost smooth, corrugated and faintly striate or ribbed on the back, the commissural faces meeting at right angles; chromosome number: n = 7, 2n = 14.

This common species grows wild from Quebec and Ontario to North Dakota, south to Florida and Louisiana, and west to Oklahoma and Texas. The name is based on numerous pre-linnean designations, but the actual type is probably the specimen collected by Carl von Linné in the George Clifford garden in or before 1737 and preserved as sheet 5 under genus 834 in the Clifford Herbarium at the British Museum (Natural History) in London. The three sheets in the Stockholm herbarium from Linnaeus' own herbarium are probably not of the type collection, since they seem to be from material cultivated in Uppsala and are probably the basis for his description in Hort. Ups. (1748) -- the Nietzel specimen is inscribed on

the obverse side, in pencil, "cfr. Verbena ll urticifolia L. sp. pl. 20", and on the reverse side, in pencil, "Linné herb." and, in ink, in Montin's handwriting, "Verbena (urticifolia) tetrandra, spicis filiformibus paniculatis, foliis indivisis ovatis serratis acutis petiolatis. Sp. pl. ed. 2. n. 13. Habitat in Virginiae, Canada aridis. Specimen ex horto Upsal. communicavit hortul. Nietzel." The first Linnaeus specimen is inscribed on the obverse side, in pencil, "Verb. ll. urticifolia L. sp. pl. 20" and, in ink, in Linnaeus' own handwriting, "ll urticifolia", and on the reverse side, in pencil, "Linné herb." and, in ink, in Linnaeus' own handwriting, "Verbena urticae folia", under which there appears, in pencil, "Linné pater scripsit!"; then, in ink, in Linnaeus' handwriting, "ex horto ups." and beneath that in a later hand "von Linné sen. scripsit" and then, in ink, "Herb. Alstroemerii" and in Dahl's hand "a Linné f."

The second Linnaeus specimen is inscribed on the obverse side, in ink, "VERBENA" and on the bottom of the sheet in Linnaeus' own hand "urticifolia", and on the reverse side, in pencil, "Linné herb." and, in ink, "Verbena tetrandria, spicis filiformibus paniculatis, foliis indivisis serratis. Lin. Spec. plant. 20. 11." and in Linnaeus' own hand "Hrt. Ups. 1.9.4."

Walpers (1845) places the species in his Section Verbenaca, Subsection Inermes, Group Foliosae, Subgroup Micranthae, and Secondary Subgroup Holophyllae, with 22 other species, keeping V. diffusa Lam. as a distinct species.

Hooker (1836), under V. hastata, says "From this the V. paniculata is probably not distinct, and the V. urticaefolia seems too nearly allied." The first half of this statement, of course, is quite true, but the second half has no basis in fact at all.

The description of V. diffusa in Rees, Cycl. (1817) is as follows: "Spreading Vervain, Poiret in Lam. no. 14. Pursh n. 7. — Spikes very long, lax, panicled, widely spreading. Bracteas acute, about as long as the calyx. Stem erect, much branched. Leaves ovato-lanceolate, serrated, somewhat downy. — Native of North America; cultivated at Paris, according to Poiret, on whose authority Mr. Pursh gave this species a place in his Flora. He speaks of it as having a near resemblance to V. urticifolia, with very small, somewhat purple, flowers. We have seen no specimen."

Poiret (1808) describes V. diffusa as follows: "Spicis longissimis, laxis, paniculatis, valdè diffusis; foliis ovato-lanceolatis, subpubescentibus, serratis; caule frutescente, subglabro" and then he follows this with a variety: "β. Eadem, caule hirsuto; spicis erectis, vix diffusis.....La variété β, qui pourroit bien être une espèce, & qui j'ai observée dans l'herbier de M. Desfontaines, a ses tiges velues, ses feuilles bien moins douces au toucher; ses épis plus nombreux, presque fasciculés, point diffus. J'y ai d'ailleurs reconnu les autres caractères de la plante que je viens de décrire." What this variety may actually be, is not clear from the description -- perhaps it could be V.

carolina L. or V. scabra Vahl. The former of these, however, was known to Poiret [as "10. V. caroliniana L. — Lam. — Willd. — Michx. — Dill."], so perhaps it was the latter to which he is here referring. The phrase "somewhat purple" flowers leads me to suspect that V. diffusa itself does not belong in the synonymy of V. urticifolia, but belongs with xV. engelmannii Moldenke. The actual specimen in the Desfontaine Herbarium would have to be consulted in order to determine this matter definitely.

W. S. Dana (1895), in referring to V. urticifolia, says: "It almost excites one's incredulity to be told that this uninteresting-looking plant, which grows rankly along the highways, is an importation from the tropics, yet for this statement the botany is responsible." Just what "botany" is responsible for this curious and totally erroneous statement is not know to me.

The spelling of the specific part of the name of this plant has varied between "urticifolia" and "urticaefolia" in both pre-linnean and post-linnean work. However, Linnaeus proposed it as "urticifolia" in his Species Plantarum (1753), which is the starting-point for our nomenclature, and I see no justification for changing this spelling as so many other writers have done. Strausbaugh & Core (1958) actually spell it "ae" and "i" on page 774 of their work and "i" on page 775.

The type of V. hastata var. oblongifolia was collected by Timothy Langdon Andrews (no. 146) in Montgomery County, Tennessee, and is deposited in the herbarium of Iowa State College at Ames, while that of V. urticaefolia var. hirsutior was gathered by George Engelmann at Saint Louis, Missouri, in September, 1838, and is deposited in the Jesup Herbarium of Dartmouth College at Hanover, New Hampshire. The V. urticifolia var. riparia of Britton is regarded by me as a synonym of V. riparia Raf. This latter species, however, is reduced to synonymy under V. urticifolia by Taylor (1915), a disposition with which it is impossible for me to agree. Schauer (1847) reduces V. scabra Vahl to synonymy under V. urticifolia, but with a question. He cites the original L., Sp. Pl. reference to page "29" in error.

Barrelier (1714) cites "Quauh chian Hernan. 399" in the synonymy of our plant, but the "QVAVH CHIAN. Caulis coloris castanei nigricantis; fructus vt in Absinthio coloris castanei" of Hernandez, Rer. Medic. Nov. Hisp. 399 (1628) and Nov. Pl. 399 (1651) appears to be a mint, perhaps Salvia occidentalis Sw. Similarly, Verbena urticae folio canadensis, foliis incisis, flore majore Tourn. is given by me in my Résumé Suppl. 4: 20 (1962) as a synonym of V. urticifolia, but it actually belongs in the synonymy of V. officinalis L.

Several hybrids involving V. urticifolia are known: that with V. bracteata Lag. & Rodr. is xV. perriana Moldenke, with V. hastata L. is xV. engelmannii Moldenke, with V. hispida Ruíz & Pav. is xV.

fabricata Moldenke, with V. lasiostachys Link is xV. inhonesta Moldenke, with V. neomexicana (A. Gray) Small is xV. torpa Moldenke, and with V. stricta Vent. is xV. illicita Moldenke. The V. urticifolia x stricta of Eggert, of Norton, and of Gates (in part) are all xV. illicita. V. urticifolia var. paniculata Engelm. is xV. engelmannii.

Verbena urticifolia has been cultivated in European gardens for several centuries. Linnaeus found it in the Clifford garden in England in or before 1737. Hegi (1927) says of it "die bereits zur Zeit der Renaissance nach Schube in den schlesischen Gärten gepflegt wurde". He says that it is used medicinally "gegen Ausschlag". Hoehne (1939) reports its use as a lotion against poison ivy (Toxicodendron radicans) poisoning, while C. G. Lloyd says "regarded as a useful medicinal agent". J. A. Harris (1934) reports on the physico-chemical properties of the sap in relation to phytogeography based on specimens collected at Cold Spring Harbor, New York. Bailey (1935) lists only Lexington as offering the seeds to the horticultural trade. Mattoon (1958) does not list any dealer offering the seeds. J. M. Greenman 1374 was collected in Bartram's garden. The McCann s.n. [9-15-36] from material cultivated in Maryland, was grown from seeds secured from Copenhagen, Denmark, under the name V. imbricifolia.

Poindexter (1962), in his comparison of V. urticifolia with V. stricta, V. hastata, xV. engelmannii, and xV. illicita, describes V. urticifolia as having a leaf-index of 1.9—2.6 (average 2.2), leaf-shape broadly lanceolate to ovate, leaf-base rounded and decurrent into the petiole, leaf-apex gradually acuminate, stem pubescence hirtellous, nutlet length 1.6--1.9 (average 1.7), markings on the back of the nutlets moderately ribbed, pollen fertility 83—99 percent (average 94.2 percent), corolla-tube length 1.5--2.5 (average 2.1), calyx length 1.7—2.3 (average 2), and petiole lateral vein measurement 14--25 (average 19.6). Poindexter 9 had a chromosome count of n = 7. Both Schwencke (1931) and Patermann (1935) report the haploid chromosome number as 6. The tallest specimen of V. urticifolia that I have ever seen growing is cited below as A. R. Moldenke 65, from Botetourt County, Virginia — it was 8 feet 3 inches tall by actual measurement.

Demaree 20121 & 21480 represent a very hairy form of the species; F. C. Gates 20889 is also very hairy and was identified by the collector as "V. urticifolia x stricta", but I do not believe that it is a hybrid. H. N. Moldenke 1330 has the pubescence remarkably short. E. M. Kittredge s.n. [Aug. 23, 1921] is very abnormal, probably due to virus infection — it was examined in turn by Dr. Carl Epling and Dr. F. W. Pennell and was excluded by them from the Lamiaceae and Scrophulariaceae. Byars s.n. [Covington, Aug. 14, 1893] has the inflorescence fasciated due to virus infection and calls to mind Stachytarpheta jamaicensis f. monstrosa

(Moldenke) Moldenke. Van Dersal 303a is also anomalous and resembles xV. engelmannii. J. M. Fogg 11475 has its fruits very densely crowded on the spikes and may possibly be xV. engelmannii. Whitehouse 16426 is very close to V. carolina L. in appearance. E. E. Chambers 27 has inflorescences exactly like those of typical var. leiocarpa Perry & Fernald; C. J. Elmore s.n. [Talmage, July 6, 1891] may possibly be that variety. J. Torrey 747-0 in the herbarium of the New York State Museum at Albany is inscribed "hybrid between V. urticifolia & V. hastata", but certainly is not a hybrid of any sort. Similarly, R. Bebb 2107 is inscribed "probably a hybrid form", but I do not think so. I regard both these specimens as representing typical V. urticifolia. Wills s.n. [July 27, 1959] was identified as xV. illicita by the collector, but seems to me to be typical V. urticifolia. S. Watson (1883) states that Palmer 2037 is "perhaps a hybrid between V. polystachya or V. urticaefolia and V. xutha", but I regard it as typical V. ehrenbergiana Schau.

Shinners 1479 is said to have had "fls. pale bluish-white" and Harris s.n. [June 26, 1933] is inscribed "fls. pink". It is possible that one or both of these represent var. incarnata (Raf.) Moldenke, which see. Hausman (1948) describes the flowers of V. urticifolia as white or pale-blue. I suspect that the pale-blue and pale bluish-white flowers were seen on specimens of xV. engelmannii, perhaps growing in close association with V. urticifolia, as it often does.

Shull (1914) germinated seeds of V. urticifolia after they were buried in mud covered with several inches of water for 4 1/4 years. Goss (1924) reports that he buried seeds of this species for twenty years -- 8 inches deep, gave 82.5 percent germination; 22 inches deep, gave 90 percent germination; 42 inches deep, gave 78 percent germination.

The species has been found growing in shade as well as in direct sunlight, in rich sand or in sandy soil, poor or alluvial sandy soil, open grassy sandy soil, heavy clay soil of hardwood forests, alluvial or shady alluvial soil, moist loam, loam soil or rich loam of wooded areas, loam soil of grasslands, open, dry, or rocky soil, moist or low moist soil, rich moist soil along streams, dry low open soil, damp or low moist rich soil, clay soil, open or sandy ground, moist or moist shady ground, waste ground and waste lands, low or low wet ground at the edges of swamps, and low land in general. Collectors report it from boggy or weedy meadows, low meadows and meadows in general, fields, old or open fields, fallow and ridge fields, pastures, swampy or abandoned pastures, damp or low wooded pastures, open or overgrazed pastures, rocky prairie pastures, dry clay and gravel fields, dry or sandy fields, potato fields, ditches, wet ditches, roadside and open roadside ditches, as well as in gardens, old cornfields, and old pecan orchards. It has been encountered in waste places about

dwellings, in woods, low rich or alluvial woods, open or rich damp woods, low or low moist woods, low woodlands bordering marshes, lowland woods along small streams, low brushy or bottom woods, upland and oak-hickory woods, moist shady and shaded creek woods, woodlands and wooded spring creek valleys, open or wooded ravines, shaded ravines and shaded ground under pecan trees, swamp and floodplain forests, pine forests, cleared low or grass areas, sandy low areas, in freshwater marshes, swampy places and open bogs along streams, in sandy or rich moist thickets, roadside thickets and thickets at the edge of prairies, swamps, swales, valleys, and barnyards. It grows on sandbars and sand flats, stream and creek banks, river and railroad banks, dry or steep banks, moist or alluvial banks, grassy banks, canal or damp lake banks, wooded river banks, and open railroad gravel banks, on floodplains and bottomlands, creek beds and creek bottoms, rocky creek bottoms, dry or sandy bottoms, low sandy or river bottoms, on limestone bluffs, on hillsides and shady steep hillsides, dry wooded hillslopes, high bottoms and pastured slopes, on low or loess ridges, mud and gravel flats, and prairies. It thrives along roadsides, dry or dry sandy roadsides, open or weedy roadsides, along highways, runs in fields, fencerows, old gravel roads, rivers, and peaty borders, at the edges of woods and upland forests, at the edges of saltmarshes and low cleared pastures, at the borders of woods and lakes, pine-oak and dry rocky woodland borders, at the sides of rivers, at lake margins, and sandy open cedar swamp margins. It has been collected at altitudes of 50 to 2100 feet, flowering in January and from May to October, fruiting from May to November.

Carpenter describes the species as "common, roadsides at lower altitudes" in Vermont. J. A. Harris (1934) says that it grows "in shady woods and bogs and along edge of lakes" in New York, while Egler (1943) reports it from "forest edges, in silt loam with limestone rock in full to partial light; occasional, single to several where present" in the same state. In Pennsylvania Benner (1932) found it in "rather dry soil of waste places, roadsides and fields; common", while Stone (1945) states "roadsides, gardens, waste places; common; fl. late June--early July". Merriman (1930) records it from "fields and borders" in Virginia. Randolph says "found in open fields and pastures usually in poor sandy soil" in West Virginia. Oosting (1942) avers that it occurs in various ecological communities -- birch dominance, mixed hardwoods, primary bottomland stands, and postclimax forest in the Piedmont of North Carolina. In Kentucky it is described as "a common coarse weed" by Shacklette, and to grow along "roadsides, waste places, and disturbed places in woods" by E. L. Braun (1943). G. N. Jones says (1945) that it grows along "roadsides and open woods, common" in Illinois, while Welch refers to it as "common" in Jasper County, Indiana.

Fults calls it "frequent" and Pohl (1955) found it in "low pastures and alluvial places, common" in Iowa, where Pammel refers to it as a common weed in sandy clay soil, associated with V. stricta, V. hastata, Anthemis cotula, Persicaria mitis, Ambrosia elatior,

and Coreopsis palmata, also as "a weed in open woods and pastures, associated with V. hastata, Xanthium commune, Echinochloa crus-galli, and Solanum nigrum" and as "a common weed in low ground and pastures, associated with Echinochloa crus-galli, Digitaria sanguinalis, Nepeta cataria, and V. hastata", and Pammel, Frankel, & Rieman speak of it as "common in alluvial sandy ground, associated with Poa pratensis, Polygonum acre, Persicaria pensylvanica, Ulmus americana, and Platanus occidentalis."

In Michigan it is said by E. G. Voss to be "frequent at edge of road through woods", "in dryish ground on roadsides, in thickets, and open woods, plentiful" by C. K. Dodge, and in "sandy leafmold just inside edge of open hardwoods, with Carex pensylvanica, Rumex crispus, Nepeta cataria, Quercus, and Ribes cynosbati" by Hamerstrom, while Darlington found it to be "occasional in open ground" in the Porcupine Mountains.

In Wisconsin it was encountered by Cull in "black loam on gravel, growing with Verbascum thapsus", by Shinners as growing with Verbena hastata and xV. engelmannii, by Fassett "in pasture with V. hastata and an apparent hybrid", by Arnot along "open dry roadside in former clay-soil prairie", by Iltis & Salamun "with Napaea dioica and Aster spp. in low weedy meadow", and by Wills on "mostly ungrazed wooded hillside of Potsdam sandstone moist from runoff water", while Iltis, Long, & Rudolph describe it as "weeds in cornfield on top of bluff" and Wunderlin says of it "weed, not common".

Gates (1940) states that it grows in thickets, waste places, and along roadsides in the eastern two-thirds of Kansas and refers to it as a therophyte or hemicryptophyte. The V. urticifolia x simplex which he records from Crawford County, deposited in the Ross Herbarium, seems to be typical V. urticifolia. In the same state Hetzer calls the species "rare in sandy soil", but Horr & McGregor call it "common in moist loam". McGregor also found it "scattered in moist prairie ravines", "scattered on banks of small creek", "scattered in woodland area along streams", and "common on rocky wooded hillside", Volle reports it "scattered in thickets in very dry sandy soil", Morley says "scattered on creek bottom", Horr found it "scattered in forest undergrowth, in loam with good moisture", Marsh encountered it "on wooded sandhills characterized by oak with walnut, hackberry, elm, mulberry, redbud, & sumac sparsely scattered", and Wagenknecht reports it from "upland pastures on southfacing hillside overgrown with honey-locust" and "at edge of oak-hickory woodland, calcareous soil". He also refers to it as a "weed along edge of disturbed area near farm pond in overgrazed prairie rangeland" and "weed at edge of field, sandy loam."

Demaree calls the plant "very common in valley land" in Arkansas; Palmer (1935) found it "in fields, roadsides, and waste ground; indifferent; general" in Missouri; and C. R. Ball calls it "common

in waste ground" in Louisiana.

In Oklahoma the species was encountered by M. Hopkins in "deep sandy-clay canyon with post-blackjack-dogwood forest on the floor mingled with Andropogon and Bouteloua", by Waterfall in "clay soil in low ground near water in Populus-Ulmus-Salix-Cephalanthus association," and by Cory as "frequent in fertile spots in small pasture near cowbarns". In Texas it grows in rich or open woods, bottomlands, and waste places and along streams, blooming from June to October, in the northeastern and eastern parts of the state, frow Bowie and Wilbarger to Newton, Brazoria, and Gonzales Counties. Thorne (1954) records it from "moist woods, thickets, and river banks.....infrequent", while Gibbes says "this foreigner has become a nuisance in our fields." Taylor & Hamblin (1963) refer to it as a weedy plant "often invasive for a small garden."

Common and vernacular names recorded for the species include "auslaendisches Eisenkraut mit Nesselblaettern", "bur-vine", "common vervain", "common white vervain", "la verveine de Canada à feuille d'ortie", "nettle-leaf vervain", "nettle leaved vervain", "nettle-leaved vervain", "nettle leaved Virginian vervain", "spreading vervain", "verbena", "verbena con foglia d'ortica di Canada", "verbena con foglie d'ortica", "verbena con foglie d'ortica di Canadà", "verveine à feuilles d'ortie", "verveine diffuse", "verveine etrangere a feuille d'ortie", "verveine etrangere, a feuille d'ortie", "white verbena", "white-verbena", and "white vervain".

Material of the species has been misidentified and distributed in herbaria under the names V. angustifolia Michx., V. carolina L., V. caroliniana L., xV. engelmanni Moldenke, V. hastata L., V. officinalis L., V. polystachia H.B.K., V. polystachya H.B.K., V. stricta Vent., V. urticifolia var. leiocarpa Perry & Fernald, Agastache nepetoides (L.) Kuntze, Eupatorium urticaefolium Reichard, Teucrium occidentale Gray, and Boraginaceae.

On the other hand, the Nichols 163 distributed as V. urticifolia is actually V. bonariensis L.; Botteri 180 and M. E. Jones s.n. [Huachuca Mts., Sept. 2, 1903] are V. carolina L.; A. M. Peterson 325 and Ugent, Weber, & Zimmerman s.n.[September 1, 1959] & s.n. [September 2, 1959] are V. hastata L.; Lawrence & Dress 570 is V. hastata f. albiflora Moldenke; M. E. Jones 29883 is V. neomexicana var. hirtella Perry; R. C. Alexander s.n. [22 Jan. '50], Blumer U.213, Clare 782, Combs 389, Curtiss 5111, Eggers 1152 & s.n. [Sierra de Luquillo, April 1883], G. L. Fisher 32217, Fredholm 3175, Hartweg 1558, Havard s.n. [Peña Colorado] & s.n. [Cottonwood Spg.], A. S. Hitchcock 269, Lindheimer 1077, A. C. Mathews s.n. [summer 1931], McAtee 1761a, C. T. Mohr s.n. [Pensacola, July 5, 1872], G. V. Nash 1248, Edw. Palmer s.n. [Biscayne Bay, 1874], E. J. Palmer 10692, S. B. Parish 5113, C. L. Pollard 1191, Rugel 639, Sintenis 767 & 1074, J. P. Standley 427, Tracy & Lloyd 22, Wiggins & Demaree 4734 & 4766, and C. Wright 3659 are

all V. scabra Vahl; J. A. Harris C.15997 and Wehmeyer 361 are V. urticifolia var. leiocarpa Perry & Fernald; M. Martens s.n. is Samolus floribundus H.B.K. in the Primulaceae; Arsène 5424 is Valeriana scorpioides P. DC. in the Valerianaceae; and Tosh 549 is Veronicastrum virginicum (L.) Farwell in the Scrophulariaceae.

Ripley s.n. [Sep. 10, 1902] was identified as V. officinalis and then as V. hastata and is inscribed "flowers blue, corolla sometimes white; leaves sometimes pinnatifid", but the specimen is typical V. urticifolia. W. C. Baker s.n. [Ithaca, 1905] in the Bailey Hortorium herbarium has a photograph of the plant mounted on the sheet with the specimen. J. A. Harris C.15997 is a mixture with var. leiocarpa Perry & Fernald. F. A. Smith s.n. [July 1896] is a mixture with xV. engelmannii Moldenke; Brinton s.n. [8.9.1878], Clevenger s.n. [Fletcher, Aug. 13, 1897], and A. Fitch s.n. [East Greenwich, 1865] with V. hastata L.; L. H. Pammel 960 with xV. illicita Moldenke; Schneck s.n. [Sept. 1, 1887] with V. stricta Vent.; Collector undesignated s.n. [Aug. 2, 1876] with Mentha longifolia (L.) Huds.; and A. S. Hitchcock s.n. [Smith Co., June 28, 1897] with Teucrium sp.

The Block Island, "Massachusetts", recorded for this species by me in my Résumé (1959) is an error for Block Island, Rhode Island. The Whiting 1757 cited below from Pope County, Illinois, may have been collected in Massac County instead. The Tharp s.n. [8.21.29] cited below from Brazoria County, Texas, may actually have been collected in Matagorda County -- the label is inscribed "Brazoria—Bay City", but Dr. Tharp says, in a letter to me, "probably Brazoria County". The Sabat in Martelli, Hort. Roman. 3 (1775) reference in the bibliography is often given as page "10", but should actually be page 11. The reference in L., Syst. Veg., ed. 13 (1774) is often given as page "66" in error. There is no reference to V. urticifolia in Kniphof, Bot. Orig. Viv. cent. 2, pl. [284] (1757) as stated by some authors. Killiam 6933 has the collector's name misspelled "O. L. Killain" on its label. The "Sheffield" County, Ohio, recorded for this species by me in my Résumé 15 (1959) appears to be an error, since there is no such county in the state; it probably refers to Sheffield, Ohio, which is in Lorain County. Stapf (1931) cites a plate 4 in "Selby & Hicks, Bull. Ohio Agric. Sta. 175 (1906)", but the bulletin here referred to was authored only by A. D. Selby and there is no plate 4 included in the New York Botanical Garden library's copy nor any other illustration of V. urticifolia. Possibly the plates from Bulletin 142 were included in some copies of Bulletin 175.

Verbena urticifolia, according to Seymour (1929), is infested by the following fungi: Acrospermum compressum Tode, Aecidium verbenae Auct. amer. (non Speg.), A. verbenicola Ellis & Kellerm., Dicaeoma verbenicola Arth., Erysiphe cichoracearum DC., E. galeopsidis DC. (1815), E. galeopsidis Atk. (1897), E. lamprocarpa Auct.

amer, (in part), E. verbenae S., Oidium erysiphoides Fries, Puccinia sydowiana Diet., P. verbenicola Arth., P. vilfae Arth. & Holw., Septoria verbenae Rob., and Sphaerotheca humuli var. fuliginea (Schl.) Salmon. F. O. Holmes (1939) says that the species is susceptible to infection by one or another of the strains of tobacco-mosaic virus (Marmor tabaci Holmes). Selby (1906) says: "There are few other plants so commonly covered with the leaf mildew, Erysiphe cichoracearum DC., as is white vervain.....Seeds like the last [V. hastata], frequent in clover and grass seeds. The ever present mildew on the weed makes it a conspicuous and eye-offending pest that may be, and certainly if appearances count, will be destroyed by cultivation or grubbing." Mitchell (1960) and my son, Andrew Ralph Moldenke, report that the flowers of V. urticifolia are regularly visited by the bee, Calliopsis nebraskensis -- the female takes pollen and nectar, while the male takes only nectar.

C. N. Jones (1941, 1944) cites Goslin s.n. from Fairfield County, and Wolfe, Wareham, & Scofield s.n. from Hocking County, Ohio; F. E. Egler (1943) cites his no. 41-181 from Onondaga County, New York; K. L. Brooks (1961) records the species from Kings County, New York; E. L. Braun (1943) cites it from Bell, Bracken, Hart, Kenton, Letcher, Oldham, Owen, Pendleton, and Perry Counties, Kentucky; Gronovius (1739) cites Clayton 431 from Virginia, while Fernald (1938) records the species from York County, Virginia; Benner (1932) cites collections from ten localities in Bucks County, Pennsylvania; Ogden, Steinmetz, & Hyland (1948) record it from York County, Maine; E. J. Palmer (1930) records his no. 23662 & no. 25006 from Suffolk County, Massachusetts, and (1916) his no. 197 from Jasper County, Missouri. Deam, Kriebel, Yuncker, & Friesner (1945) record it from Adams, Huntington, Jay, and Randolph Counties, Indiana, and (1946) from Vermilion County; Deam, Yuncker, & Friesner (1951) from Switzerland and Washington Counties and (1953) from Bartholomew County; Loew (1949) also records it from Huntington County in that state. Pinkava (1963) cites the species from Sandusky County, Ohio.

Steyermark (1963) records this species from Adair, Andrew, Atchison, Audrain, Barton, Benton, Buchanan, Callaway, Carroll, Carter, Chariton, Christian, Clark, Cooper, Crawford, Dade, Dallas, DeKalb, Dent, Douglas, Dunklin, Gentry, Harrison, Gasconade, Holt, Howard, Howell, Johnson, Knox, Laclede, Lafayette, Lawrence, Lewis, Livingston, Macon, Madison, Mercer, Mississippi, Moniteau, Montgomery, New Madrid, Newton, Oregon, Osage, Ozark, Pettis, Polk, Pulaski, Putnam, Randolph, Ray, Reynolds, Ripley, Saint Charles, Saint Clair, Sainte Genevieve, Saline, Schuyler, Scotland, Shannon, Stoddard, Stone, Sullivan, Texas, Vernon, Washington, Wayne, Webster, and Wright Counties, Missouri, based on specimens in the herbarium of the Missouri Botanical Garden at St. Louis.

Schauer (1847) cites the following collections from the Berlin and DeCandolle herbaria: "In Americae septentr. civitt. austral.,

ad vias in civit. Ohio (Frank!), Missouri (Engelm.!), Carolina (Bosc!), Louisiana (Taint.!), tum circa Mexicum (H. et B.) et in Antillis majoribus Cuba (R. de la Sagra!) et Jamaica (Sw.!)." The Mexican specimen, of course, is V. carolina L. and the West Indian ones are V. scabra Vahl.

Perry (1933) cites the following 145 additional specimens not as yet seen by me: QUEBEC: Chambly Co.: Marie-Victorin 3124 (E). Montmorency Co.: Marie-Victorin 15750 (G). ONTARIO: Russell Co.: Scott s.n. [Casselman, 24 Aug. 1891] (G). MAINE: York Co.: Fernald & Parlin 928 (G). NEW HAMPSHIRE: Cheshire Co.: Robinson 559 (G); Williams s.n. [Walpole, 28 July 1901] (G). VERMONT: Addison Co.: Williams s.n. [East Middlebury, 14 July 1908] (G). Bennington Co.: M. A. Day 147 (G). Rutland Co.: Eggleston 1531 (G). Windham Co.: Robinson 134 (G). MASSACHUSETTS: Berkshire Co.: M. A. Day 79 (G). Bristol Co.: Sturtevant s.n. [Nonquit, 1888] (G). Essex Co.: Williams s.n. [Manchester, 18 Aug. 1895] (G). Hampden Co.: Morris s.n. [Monson, Aug. 1897] (E); F. C. Seymour 601 (E). Middlesex Co.: Lane s.n. [Waverley, 10 Aug. 1878] (G); Sturtevant s.n. [South Framingham, 25 July 1890] (E). Norfolk Co.: Williams s.n. [Dedham, 22 Aug. 1897] (G). Suffolk Co.: Deane s.n. [Belmont, 27 Sept. 1891] (G); Kennedy s.n. [Milton, 2 Aug. 1887] (G). RHODE ISLAND: Providence Co.: J. F. Collins s.n. [Providence, 20 July 1892] (G); Thurber s.n. [Providence, July 1844] (G). Block Island: Fernald, Hunnewell, & Long 10262 (G). CONNECTICUT: Hartford Co.: Wright s.n. [Hartford meadow, 3 Aug. 1882] (G), s.n. [Wethersfield] (G). New Haven Co.: Eaton s.n. [New Haven, 1858] (E). NEW YORK: Delaware Co.: Von Schrenk s.n. [Fleischmanns, 30 July 1892] (E). Saint Lawrence Co.: Mrs. O. P. Phelps 800 (G). Tompkins Co.: Eames & McDaniels 4870 (G); Trelease s.n. [Six Mile Creek, Ithaca, 8 July 1878] (E). Warren Co.: Seler 4560 (G). Washington Co.: Burnham s.n. [Vaughns, north of Hudson Falls, 8 Aug. 1912] (G). Westchester Co.: Stabler s.n. [Port Chester, 3 Sept. 1886] (G). NEW JERSEY: Middlesex Co.: B. D. Halsted 175 (G). Morris Co.: K. K. Mackenzie 4746 (E, G). PENNSYLVANIA: Dauphin Co.: J. K. Small s.n. [Harrisburg, 20 July 1888] (G). Lancaster Co.: A. A. Heller s.n. [Lancaster, August 29, 1900] (G). Philadelphia Co.: Greenman 1376 (E, G); MacElwee 882 (E); Redfield s.n. [near Philadelphia, 29 July 1871] (E). DELAWARE: New Castle Co.: Tidestrom 11572 (G). MARYLAND: Cecil Co.: Tidestrom 11413 (G). Prince Georges Co.: Symons s.n. [College Park] (E). DISTRICT OF COLUMBIA: F. Blanchard s.n. [near Long Bridge, 11 July 1891] (E); Bootcher 176 (E, G), 226 (E, G); Holm s.n. [Brookland, 19 July 1912] (E). VIRGINIA: Smythe Co.: J. K. Small s.n. [Marion, July 20, 1892] (E). WEST VIRGINIA: Cabell Co.: Randolph 474 (G). Randolph Co.: Greenman 244 (G). Tucker Co.: Greenman 245 (G). SOUTH CAROLINA: Anderson

Co.: J. Davis 8458 (E), 9117 (E). Orangeburg Co.: Ravenel s.n. [Santee Canal] (G). FLORIDA: Franklin Co.: A. W. Chapman s.n. [Apalachicola] (E). Leon Co.: Rugel s.n. [near Tallahassee, May 1843] (E). ALABAMA: Baldwin Co.: S. M. Tracy 8037 (E, G). MISSISSIPPI: Wilkinson Co.: Joor s.n. [Woodville, 7 Sept. 1887] (E). OHIO: Butler Co.: Overholts s.n. [Oxford, 6 June 1910] (E). Cuyahoga Co.: Greenman 1380 (E). Hamilton Co.: Stephenson s.n. [Cincinnati, 18 Oct. 1930] (E). Lorain Co.: Hicks s.n. [Oberlin, June 1895] (E). ILLINOIS: Champaign Co.: H. A. Gleason 718 (G). Cook Co.: M. A. Chase s.n. [Bowmanville, July 7, 1896] (E); Greenman 1877 (E). LaSalle Co.: Thone 50 (E). Madison Co.: Bucholz s.n. [near Alton, 24 July 1927] (E). Richland Co.: Ridgway 2831 (E). Saint Clair Co.: Hertel s.n. [Freeburg, Aug. 1917] (E). INDIANA: Lake Co.: Lansing 2806 (G). IOWA: Black Hawk Co.: Burk 591 (E). Decatur Co.: J. P. Anderson s.n. [July 13, 1903] (E). Story Co.: Bessey s.n. [Ames, Sept. 1873] (G); J. R. Campbell 67 (E, G); A. S. Hitchcock s.n. [Ames] (E). Van Buren Co.: Graves 1691 (E). KENTUCKY: Jessamine Co.: F. T. McFarland 92 (E). Scott Co.: Singer 308 (E). Warren Co.: Price s.n. [Bowling Green, Aug. 1896] (E). TENNESSEE: Knox Co.: Ruth 833 (E). MINNESOTA: Houston Co.: Freiberg s.n. [July 1912] (E). Stearns Co.: Chandonnet s.n. [Collegeville, 29 July 1912] (E). SOUTH DAKOTA: Brookings Co.: Johnson s.n. [1903] (E). Clay Co.: Visher s.n. [Vermilion, 11 Sept. 1911] (E). Davison Co.: Hoffstetter s.n. [Mitchell, July 1903] (E). KANSAS: Riley Co.: J. B. S. Norton 389 (E, G), s.n. [Manhattan, Sept. 1893] (E); Waugh s.n. [16 Aug. 1892] (E). MISSOURI: Butler Co.: Dewart 15 (E). Cass Co.: Broadhead s.n. [24 July 1864] (E). Cole Co.: Knause s.n. [Jefferson City, July 1866] (E). Greene Co.: Dewart 18 (E). Iron Co.: Greenman 3766 (E). Jackson Co.: Bush s.n. [7 Aug. 1893] (E). Jasper Co.: E. J. Palmer 198 (E). Jefferson Co.: A. S. Hitchcock s.n. [Victoria, 6 July 1890] (E); Wislizenus 282 (E). Marion Co.: J. Davis 73 (E), 1274a (E), 3453 (E), 3591 (E), 4450 (E), 4565 (E). McDonald Co.: E. J. Palmer 4229 (E). Miller Co.: Trelease 719 (E). Pike Co.: J. Davis 950 (E). Ralls Co.: J. Davis 3852 (E). Saint Louis Co.: Johnson s.n. [Fern Glen, 14 July 1906] (E); Kellogg s.n. [Allenton, 27 July 1884] (E); Letterman s.n. [Allenton] (E). Taney Co.: Bush 452 (E). Saint Louis: Glatfelter s.n. [St. Louis, 11 Aug. 1894] (E); Kellogg 15277 (E); Riehl 135 (E). ARKANSAS: Clay Co.: Eggert s.n. [near Corning, 21 Aug. 1896] (E). Hempstead Co.: Bush 884 (E); Greenman 4412 (E). LOUISIANA: Lafourche Par.: Guidroz 3 (G). Natchitoches Par.: E. J. Palmer 8000 (E). Rapides Par.: C. R. Ball 556 (E, G). Parish undetermined: Hale s.n. (G). NEBRASKA: Franklin Co.: Laybourne s.n. [Franklin, 1893] (E). Lancaster Co.:

Hedgcock s.n. [Lincoln, Aug. 1899] (E). County undetermined: Hayden s.n. [Dickson's Bluffs on Missouri River, 12 July 1853-4] (E). OKLAHOMA: Choctaw Co.: H. W. Houghton 4015 (G). Comanche Co.: Clemens 11749 (E). Kay Co.: G. W. Stevens 1821 (G). Major Co.: G. W. Stevens 1742 (G). Murray Co.: Emig 716 (E). Payne Co.: Stratton 158 (E). Woods Co.: G. W. Stevens 1673 (E, G). County undetermined: Bush 432 [Arkansas, 23 July 1894] (E). TEXAS: Brazoria Co.: Bush 1482 (E). Dallas Co.: Reverchon 734 (E), s.n. [Dallas, Aug. 1876] (G). Harris Co.: Lindheimer 195 (E). The Aiton 8467, Baker s.n. [St. Croix Falls], Eggleston 4841, Gibbes s.n. [Charleston], Grimes 3794, Rydberg 1716, Schuette s.n. [Green Bay], Small s.n. [Reed Creek], and Visher 2263, which she cites, are all var. leiocarpa Perry & Fernald. The Tracy s.n. from Taylorville, Mississippi, which she cites as "2 Aug. 1903" is probably the collection cited below by me as "[Taylorville, 8/21/1903]". The Britton s.n. which she cites from "NY" is probably the collection cited below as Britton & Britton s.n. in the Columbia University Herbarium; the Riehl 135 which she cites from "NY" is actually in the Meisner Herbarium, while the Britton s.n., Halsted 175, and Torrey 154 which she cites from "NY" are actually all in the Columbia University Herbarium. She says: "Verbena urticifolia is readily distinguished by petiolate and rarely scabrous leaves, remotely flowered slender spikes, and unconnivent fruiting calyces. On account of its close resemblance to V. scabra the two were confused, and V. urticifolia formerly was believed to be native of tropical America. It would now appear to be indigenous in the Middle Eastern States, establishing itself as a weed in various places."

In all, 1828 herbarium specimens and 18 mounted photographs and clippings, including several phototypes and type material of many of the synonyms, have been examined by me.

Citations: QUEBEC: Argenteuil Co.: B. J. Harrington s.n. [St. Andrews, 1867] (Mm—24611); Lucien 1443 (Vi); J. B. McConnell s.n. [July 28, 1870] (Mm—22304); H. N. Moldenke 21736 (Bm, Mm). Beauharnois Co.: Louis-Marie s.n. [13 aout 1955] (Ca—72393). Chambly Co.: A. Dubois s.n. [Chemin de Gentilly, 14 août/30] (N); Marie-Victorin 3124 (Gg—31442, Vi); Marie-Victorin & Rolland-Germain 43528 (Ca—882831, Ob—89437, Um—187). Chateauguay Co.: Lanoutte s.n. [juillet 1934] (Um—182); Marie-Victorin 28087 (Um—194). Chicoutimi Co.: R. Campbell s.n. [St. Anne, September] (Mm—20477). Deux-Montagnes Co.: Louis-Marie 24134 (Um—198), 24187 (Um—199). Iberville Co.: Marie-Victorin & Rolland-Germain 43878 (St—9276, Um—188). Jacques Cartier Co.: "J. C. C." s.n. [St. Laurent] (Vi); Cailloux s.n. [Montréal, 3 octobre 1936] (Um—181); A. F. Holmes s.n. [Côte St. Henri, Aug. 1, 1821] (Mm—360); Kucyniak 55 (Vi);

Mignault s.n. [Ste. Genevieve, 9 aout 1924] (Um--191); Mus. Coll. Ste.-Laurent s.n. (Vi); A. Roy 626 (Vi); E. Roy 113 (Vi). Laprairie Co.: Cléonique 4458 (Vi). Missisquoi Co.: Marie-Victorin, Rolland-Germain, Raymond, & Boivan 4325 (Um--57433). Montmorency Co.: Rolland-Germain 15750 (I, Pl--91769, Um--193, Um--200, Vi). Nicolet Co.: Stanislas 604 (Um--189, Um--190). Outremont Co.: E. Roy 113 (Um--192). Québec Co.: Anselme s.n. [12 juillet 1931] (Um--201, Vi); Cayoutte 49-175 (Vi); Rolland 15750 (N). Richelieu Co.: Marie-Victorin 15749 (Vi). Terrebonne Co.: Rouleau 431 (Um--49239). Vandreuil Co.: E. Roy 3334 (Vi, Vi), 3870 (N, Vi, Vi, W--2096502). Verdun Co.: Vincent s.n. [Eté 1942] (Vi). Ile Ste. Helene [Hochelaga Co.]: Rouleau 1076 (Um--254). ONTARIO: Bruce Co.: R. Campbell s.n. [Chesley, 1886-1911] (Mm--20476). Carleton Co.: Ami 36 (Mm--4647); Minshall 1816 (N); Soper, Calder, Gillett, & Vick 3320 (S). Elgin Co.: G. L. Fisher s.n. [St. Thomas, Sept. 1, 1904] (Ur), s.n. [St. Thomas, July 31, 1906] (B). Essex Co.: Gillman s.n. [Sandwich, August 2, 1869] (Pr). Missisquoi Co.: J. Fowler s.n. [Bedford, Sept. 4, 1893] (W--261025). Norfolk Co.: A. R. Moldenke 1047 (Lw, Lw, Ut). Prescott Co.: Cody & Dore 6574 (Hi--186970). Simcoe Co.: R. F. Cain 424 (Bt--15847). Welland Co.: J. Torrey 154 (C, T). York Co.: C. Skottsberg s.n. [11 Aug. 1913] (S). NEW HAMPSHIRE: Cheshire Co.: H. N. Moldenke 8850 (N). Grafton Co.: Barss s.n. [Hanover, 15 July 1910] (Or--8871); W. V. Brown s.n. [Hanover, Aug. 8, 1939] (H--54385); H. E. Sargent s.n. [Plymouth, 8-17-90] (Ok). Hillsboro Co.: Batchelder 2112 (Dt), s. n. [Petersborough, August 21, 1926] (Dt). Strafford Co.: Hodgdon & Steele 7098 (Dt); Hodgdon & Townsend 6548 (Dt). County undetermined: W. Flint s.n. (Dt). VERMONT: Addison Co.: Collector undesignated s.n. [Middlebury, Aug. 5, 1879] (Vt); Dutton s.n. [Leicester, 8/5/06] (Vt). Bennington Co.: Carpenter s.n. [Arlington, August 27, 1938] (Vt); M. A. Day 147 (Vt, W--348486). Caledonia Co.: F. Blanchard s.n. [Peacham] (Dt). Chittenden Co.: Grout s.n. [Burlington, Aug. 3, 1891] (Vt); Pringle s.n. [Charlotte, 19 Sept. 1878] (Vt), s.n. [Charlotte, 16 August 1883] (Vt). Rutland Co.: Carpenter s.n. [M. S., 7-19-06] (Vt), s.n. [Middletown Spr.] (Vt); Dole 592 (Vt); Eggleston 1531 (Vt), s.n. [Rutland, 8-'90] (Dt). Windham Co.: L. A. Wheeler s.n. [Townshend, 8/23/23] (S). Windsor Co.: W. V. Brown s.n. [Norwich, Aug. 10, 1939] (H--54251); E. M. Kittredge s.n. [Aug. 23, 1921] (N); Loveland s.n. [Norwich, 8-8-1878] (Vt). County undetermined: Herb. Univ. Vermont 9581-9 (Vt); Pringle s.n. [19 Sept. 1878] (Vt). MASSACHUSETTS: Berkshire Co.: G. L. Ames s.n. [Williamstown, July 1857] (Mi); Meredith s.n. [Sept. 10, 1926] (S); Moldenke & Moldenke 11740 (N); Vail s.n. [Aug. 27th 1897] (N); W. A. Weber 1592 (Bl--48173, Io--153003).

Bristol Co.: Blomberg s.n. [N. Easton, July 24, 1902] (Rf), s.n. [August 20, 1904] (S). Franklin Co.: R. E. Torrey s.n. [July 20, 1910] (Ms). Hampden Co.: A. B. Seymour s.n. [Granville, August 1889] (H--106462, H—106588); F. C. Seymour 601 (H—107709, Ms, N). Hampshire Co.: S. C. Brooks s.n. [Amherst, September 5, 1907] (Ca--377696); A. Clark s.n. [Amherst, July 1876] (Ms); Herb. Mass. Agr. Exp. Sta. s.n. [Amherst, July '06] (Ms); Jesup 1957 (Dt). Middlesex Co.: F. S. Beattie s.n. [July 19, 1927] (Or--20958), s.n. [July 23, 1927] (Ok--10370, Ok—10371), s.n. [Lowell, July 28, 1927] (Po—146578), s.n. [Lowell, July 23, 1928] (Es), s.n. [Dracut, July 27, 1929] (Bm); A. H. Clark 113 (Gg--31440); Cushman s.n. [Middlesex Fells, July '89] (Up--69672); G. B. Grant 805 [1989; 3058] (Po--267669); Grover s.n. [July 20, 1895] (Ob--50845); M. L. Loomis 1426 (W--985701); Lyman s.n. [Cambridge] (Dt); F. C. Seymour s.n. [Waverley, July 22, 1908] (H—107710); K. M. Wiegand s.n. [July 23, 1912] (Go). Norfolk Co.: Lourteig 1719 (S); K. M. Wiegand 2061 (Io—127768). Worcester Co.: W. V. Brown 3094 (Au); Goodale, Markert, & Piper 55641 (H--106460). Martha's Vineyard: Mackeever MV.254 (G, N, Ot, S, Up). RHODE ISLAND: Newport Co.: Collins, Spaulding, & Eravatt s.n. [28 Sept. 1916] (Vi). Block Island: P. Spaulding s.n. [Block Island, Sept. 28, 1916] (Gg--31443). CONNECTICUT: Fairfield Co.: H. C. Beardslee s.n. [Monroe] (Ob--50855); Herb. Univ. Calif. 199068 (Ca); Langlois s.n. [8-22-89] (N); C. L. Pollard 233 (W--3096l1). Hartford Co.: M. Brandegee s.n. [Berlin] (Ca--468125); H. C. Cowles s.n. [Sept. 9, 1892] (Ob--50848). Litchfield Co.: S. L. Clarke s.n. [Washington, July '92] (N); Dwyer 2468 (N). Middlesex Co.: Barratt s.n. [1839] (T), s.n. [Middletown, 1840] (S). New Haven Co.: Kleeberger s.n. [New Haven, Aug. 1874] (Gg—31439). New London Co.: Jansson s.n. [July 26, 1927] (S), s.n. [Groton, Aug. 16, 1928] (Or--22020), s.n. [Groton, Sept. 2, 1929] (Go), s.n. [North Stonington, Aug. 12, 1952] (Go); W. A. Setchell s.n. [Norwich, July 28, 1883] (Ca—25190). Tolland Co.: M. T. Travis 1948 (Up). Windham Co.: J. L. Sheldon s.n. [Central Village, July 1897] (We). County undetermined: A. Gray s.n. [Conn.] (S); Krebs s.n. (Cp); C. Wright s.n. (Cm). NEW YORK: Albany Co.: H. D. House 26892 (Al); Whitney 1911 (Al). Allegany Co.: A. R. Moldenke 1053 (Lw), 1055 (Lw). Bronx Co.: Ahles 581 (Aa), 653 (Aa); Clute s.n. [Pelham Park, July 12, 1899] (N); H. M. Denslow s.n. [High Bridge, July 1864] (Ms); T. W. Edmondson 2519 (N); Gilly 110 (N). Cattaraugus Co.: Alexander & House 13023 (Al); A. R. Moldenke 1052 (Lw). Chautauqua Co.: F. W. Johnson 1329 (N). Chenango Co.: E. E. Davis 83 (Al). Columbia Co.: R. McVaugh 1408 (Al, Up), 14767 (Mi). Delaware Co.: P. Wil-

son s.n. [Arkville, July 26, 1915] (N). Dutchess Co.: J. M. Fogg 7407 (Up); Moldenke & Moldenke 19528 (Sm); Sherwood s.n. [Pawling, Aug. 5] (Sh, Sh, Sh, Sh, Sh, Sh, Sh), s.n. [Pawling, Aug. 10] (Sh, Sh, Sh), s.n. (Sh). Genesee Co.: E. J. Hill 134.1855 (Ur); Muenscher & Brown 21404 (It); W. H. Rhoades s.n. [Buttermilk Falls, Aug. 8, 1915] (Hs). Greene Co.: F. W. Johnson s.n. [Windom, June 25, 1921] (N); N. Taylor 1294 (N). Jefferson Co.: Hotchkiss 873 (Al). Madison Co.: H. D. House 13648 (Al); Maxon s.n. [vicinity of Oneida, July 22, 1895] (W--674568). Monroe Co.: Barss s.n. [Rochester, 7 September 1909] (Or--8873); Baxter s.n. [near Rochester, August 1925] (Ca--882834); Holger s.n. [July 1863] (Al); W. A. Matthews 3272 (Hi--29811, La); A. R. Moldenke 9 [H. N. Moldenke 20437] (N, No). Nassau Co.: H. N. Moldenke 19050 (N, Or); W. A. Weber 933 (Bl--48170, Io--150189). Niagara Co.: E. C. Townsend s.n. [Aug. 1890] (Pl--86886). Oneida Co.: Haberer s.n. [6-24-1886] (Al). Onondaga Co.: G. T. Hastings s.n. [Tully Lake, July 31, '95] (N). Ontario Co.: A. R. Moldenke 7 [H. N. Moldenke 20435] (Mr, Mr). Orange Co.: Bohus-Jensen & Moldenke 41 (Jn); H. M. Denslow s.n. [Aug. 10, 1922] (N); W. H. Lewis Jr. s.n. [Tuxedo Park, Jy. 27, '99] (N); Lucian 406 (Wl); Raup 7603 (Mi). Orleans Co.: Lennon s.n. [July 1893] (Al). Oswego Co.: Hotchkiss 3314 (Al); C. S. Sheldon s.n. [July 13, 1878] (Al). Putnam Co.: Moldenke & Moldenke 11852 (N). Queens Co.: Hexamer & Maier s.n. [Little Bayside, July 9, '53] (Cm); L. Johnson s.n. [Fresh Pond, July 18, 1876] (Lh); Poggenburg s.n. [Flushing, July 11, '86] (Tc). Rensselaer Co.: Banker 1438 (N); Puissant s.n. (Br). Rockland Co.: Lehr 435 (N). Saint Lawrence Co.: Mrs. O. P. Phelps 800 (Gg--314441). Saratoga Co.: J. M. Fogg 7132 (Up). Schenectady Co.: H. D. House 23747 (Al). Steuben Co.: A. R. Moldenke 12 [H. N. Moldenke 20463] (N). Suffolk Co.: Banker 3020 (N); J. A. Harris C.15997, in part (Ca--610148); L. K. Henry s.n. [Wading River, July-Aug. 1928] (Cm). Tompkins Co.: L. H. Bailey s.n. [near Ithaca, Aug. 25, 1925] (Ba, Ba); W. C. Baker s.n. [Ithaca, 1905] (Ba); Clovis s.n. [September 1952] (We); Greenfield s.n. [July 1931] (N); Hoisington 74 (Ok--15639); Laird s.n. [July 17, 1917] (Ms); B. Maguire 6661 (Ua--26813); A. R. Moldenke 4 [H. N. Moldenke 20427] (N), 1069 (Lw); Muenscher & Bechtel 526 (Ca--882835, Io--112239, Pl--63399, Ur); Munz 616 (Ca--882842, Po--64682); Naylor & Smith s.n. [Ithaca, 8-8-1924] (Bt--37674); E. L. Palmer 1013 (S); O. E. Pearce s.n. [Six Mile Creek, July 26, 1885] (W--218875); C. H. Peck s.n. [Freeville] (Al); "J. M. R." s.n. [July 26, 1926] (Gu--E.1055); Rendle s.n. [McClean, Aug. 16, 1926] (Bm); C. Skottsberg s.n. [17/8/1926] (Go). Ulster Co.: Elting 2074 (Al); J. M. Fogg 7123 (Up); H. D. House

24924 (Al). Warren Co.: H. D. House 30092 (Au). Washington Co.: S. H. Burnham s.n. [August 1912] (Al); Dobbin 234 (Al); A. Fitch s.n. [East Greenwich, 1865] (Mi); H. D. House 23874 (Al), 28329 (Al, Ca--882840). Westchester Co.: J. H. Barnhart 333 (N), 1484 (N); H. A. Gleason Jr. 1488 (Go, N, S); Herb. N. Y. Bot. Gard. s. n. [July 18, 1896] (N), s.n. [August 8, 1896] (N); A. R. Moldenke 21 [H. N. Moldenke 21120] (B, Fy, N, Rs); Moldenke & Acuña 19503 (Es); Waxenbaum 1281 (Wx). Yates Co.: Clovis s.n. [September 28, 1952] (We); S. H. Wright s.n. (Mm--15402). Staten Island [Richmond Co.]: Billberg s.n. [Staten Island, 1826] (S); H. N. Moldenke 19122 (N, Or, Si); W. A. Weber 207 (Bl--48172, Io--150808). County undetermined: Collector undesignated 1525 (N); Herb. Jard. Bot. Brux. s.n. [Long Island, July 24, '67] (Br); Ottley 16595 (Kr); J. Torrey 747-0 (Al), s.n. (C, Pa). NEW JERSEY: Bergen Co.: Dautun s.n. [Cresskill, Aug. 13, 1903] (La), s.n. [Cherry Hill, 1 aout 1908] (La); Oehler s.n. [1877] (N). Burlington Co.: J. M. Fogg 9240 (Up). Cape May Co.: W. Stone 16316 (Up). Cumberland Co.: J. W. Adams 883 (Up, We). Essex Co.: Lighthipe s.n. [East Orange, Aug. 4, 1914] (Au), s.n. [East Orange, Aug. 7, 1917] (N). Hudson Co.: L. H. Bailey s.n. [Hoboken, Aug. 18, 1920] (Ba); Billberg s.n. [Hoboken, 1826] (S). Hunterdon Co.: A. R. Moldenke 46 [H. N. Moldenke 21769] (Bm). Mercer Co.: Collector undesignated s.n. [Aug. 2, 1876] (Pr), s.n. (Pr). Middlesex Co.: B. D. Halsted 175 (Ah, C, Fc, Io--15354, Mi, Ua--11393, Ua--27136, Ur, Vt, We); L. H. Pammel s.n. [Perth Amboy, Sept. 3, '24] (Io--116602); Vail s.n. [New Brunswick, July 18th 1890] (N). Monmouth Co.: R. C. Alexander s.n. [Redbank, 14 July '64] (Ca--379999); H. N. Moldenke 21718 (Mm, Sm). Morris Co.: N. L. Britton s.n. [Green Pond, Sept. 21, 1886] (C). Passaic Co.: E. W. Berry s.n. [Passaic, July 1894] (Tc); G. V. Nash 476 (Br, Lh). Salem Co.: J. M. Fogg 10011 (Up). Somerset Co.: Lavoie 403 (Vi); Lighthipe s.n. [Rocky Hill, Aug. 1, 1916] (Au, N); A. R. Moldenke 18 [H. N. Moldenke 20387] (N, Wh); H. N. Moldenke 1330 (E, Go, H--5483, N, N, N, S, Up, Ur), 2627 (N), 7401 [Pl. Vic. N. Y. City 41] (Go, N, Um--183, Ur), 8092 (Go, N, N, S, Ur); Moldenke & Moldenke 11687 (Go, N). Sussex Co.: H. N. Moldenke 21539 (Ss); H. H. Rusby s.n. [Franklin, Aug. 1879] (Mn--16103). Union Co.: H. N. Moldenke 21885 (B). PENNSYLVANIA: Adams Co.: J. M. Fogg 13598 (Up), 15216 (Up). Allegheny Co.: A. Dubois 337 (N), 351 (N); O. E. Jennings s.n. [Aug. 1, 1918] (Cm); Millward s.n. [Wildwood, July 29, 1919] (Cm); Van Dersal 303a (Cm, Up). Armstrong Co.: J. M. Fogg 15338 (Up). Beaver Co.: Andriessen s.n. [July 1881] (Cm); Graham & Graham s.n. [7/29/23] (Cm). Bedford Co.: O. E. Jennings s.n. [8/10/1941] (Cm). Berks

Co.: J. M. Fogg 5826 (Up); H. N. Moldenke 19371 (N). Bradford Co.: H. A. Wahl 16802 (Hi--168732); Westerfeld 919 (Cm). Bucks Co.: H. R. Bassler s.n. [July 27, '79] (Ka). Butler Co.: Bright s.n. [Plains Church, Aug. 2, 1924] (Cm); H. W. Graham s.n. [Buhl, 8/28/22] (Cm); L. K. Henry 552 (Ca--882839, Hi--192854, W--1810936); O. E. Jennings s.n. [Valencia, Sept. 27, 1904] (Cm); N. Russell H.3322 [NR-1986] (We). Cambria Co.: O. E. Jennings 52 (Cm), s.n. [Flinton, 7/24/08] (Cm). Cameron Co.: J. M. Fogg 18177 (Up); O. E. Jennings s.n. [Emporium, July 21, 1904] (Cm). Centre Co.: O. E. Jennings s.n. [7/16/09] (Cm); A. R. Moldenke 787 (Lw). Chester Co.: J. M. Fogg 5772 (Up). Clarion Co.: O. E. Jennings s.n. [Red Bank, July 21, 1904] (Cm); H. N. Moldenke 21899 (Lw). Clearfield Co.: Westerfeld 23 (Cm). Columbia Co.: H. N. Moldenke 21892 (Lw, Ut). Crawford Co.: C. D. Curtis s.n. [Meadville, Aug. '93] (Po--65182); Shafer s.n. [July 23, 1901] (Cm, Cm). Cumberland Co.: A. R. Moldenke 45 [H. N. Moldenke 21768] (Bm), 98 (Fg). Delaware Co.: Brinton s.n. [Wawa, Aug. 29, 1888] (Up--17127); E. C. Earle 1510 (Up); J. M. Fogg 5704 (Up); W. M. Thompson Jr. 352 (Up). Erie Co.: N. H. Phillips 86 (Up). Franklin Co.: A. R. Moldenke 42 [H. N. Moldenke 21765] (Bm), 43 [H. N. Moldenke 21766] (Bm, Gg, Mi); Tidestrom 7334 (W--754054). Greene Co.: O. E. Jennings s.n. [9/9/21] (Cm); Lohr 236 (Up). Huntingdon Co.: E. H. Graham s.n. [7/12/32] (Cm, Up, Up). Indiana Co.: O. E. Jennings s.n. [July 11, 1908] (Cm). Jefferson Co.: H. N. Moldenke 21898 (Lw). Juniata Co.: J. M. Fogg 15537 (Up). Lancaster Co.: Brubaker 59 (Up), 88 (Up), 856 (Up), 923 (Up), 986 (Up), 1496 (Up); A. A. Heller s.n. [Lancaster, August 29, 1900] (W--407056); J. K. Small 106 (Ob--50853). Lawrence Co.: Jennings & Kennedy s.n. [Sept. 18, 1919] (Cm). Lebanon Co.: C. H. Kauffman s.n. [Aug. 1889] (Mi). Lehigh Co.: Arndt s.n. [Allentown, July 1911] (Up); O'Neill s.n. [Cedar Creek, August 19, 1927] (Fl--21130, I). Luzerne Co.: J. K. Small s.n. [Lily Lake] (Cp). Lycoming Co.: Gress, Jennings, & Jennings s.n. [Cedar Run, Sept. 2, 1920] (Cm); W. H. Rhoades s.n. [near Williamsport, Aug. 1937] (N); W. R. Taylor s.n. [Essick Heights, 1912] (Up--68767). Monroe Co.: Bernhardt s.n. [Paradise Falls, Sept. 10, 1928] (Up); G. B. Grant 7129 (Po--267626); Langman 94 (Up). Montgomery Co.: J. M. Fogg 9140 (Up); A. R. Moldenke 103 (Fg); V. Wismer 405 (Up), 424 (N, Up). Northampton Co.: R. L. Schaeffer 9450 (Au--122815); Tyler s.n. [Easton, Aug. 7, 1896] (N). Northumberland Co.: J. M. Fogg 17687 (Up), 18013 (N); A. R. Moldenke 13 [H. N. Moldenke 20474] (N); M. T. Travis 2296 (Up). Perry Co.: J. M. Fogg 17922 (Up); A. R. Moldenke 16 [H. N. Moldenke 20487] (N). Philadelphia Co.: J. W. Adams 446 (Up); Brinton s.n. [8.9.1878] (Pl--115520); J. M.

Fogg 16194 (Up), 16244 (Up); J. M. Greenman 1374 (Or--14318); H. A. Lang 514 (Up); MacElwee 882 (Ka--71128, N, S, Um--197), s.n. [West Philadelphia, Sept. 4, 1895] (N). Pike Co.: Graham & Henry s.n. [July 1930] (Cm). Schuylkill Co.: J. M. Fogg 11475 (Up); P. R. Wagner 686 (Up). Snyder Co.: A. R. Moldenke 15 [H. N. Moldenke 20485] (S); Wade & Wade 1434 (Up). Somerset Co.: J. M. Fogg 15266 (Up), 15280 (Up); O. E. Jennings s.n. [Keystone, Oct. 9, 1904] (Cm). Sullivan Co.: F. R. Fosberg 15778 (Up); W. Stone 15168 (Up). Warren Co.: H. N. Moldenke 15426 (We), 17983 (Br). Washington Co.: J. M. Fogg 18354 (Up); L. K. Henry s.n. [9/26/40] (Cm); D. Wilson 152 (We). Westmoreland Co.: Demoise s.n. [9/1/35] (Cm), s.n. [7/26/36] (Cm); L. K. Henry s.n. [7/28/41] (Cm); K. R. Holmes s.n. [Salina, July 15, 1902] (Cm); A. R. Moldenke 102 (Fg); H. N. Moldenke 19366 (N). Wyoming Co.: Osterhout s.n. [Tunkhannock, July 18, 1929] (Po--173426). York Co.: J. M. Fogg 12643 (Up); K. B. Hoover 4034 (Hi--196036). County undetermined: Schweinitz s.n. [1829] (Br). DELAWARE: New Castle Co.: Canby s.n. [Sept. 28, 1896] (Pl--22611). Sussex Co.: Lafferty s.n. [July 1865] (Pr). MARYLAND: Allegany Co.: Ahles & Gilpin 8182 (Ur). Baltimore Co.: Boldo 62 (Q); Jones & Ridgway s.n. [Aug. 15, 1903] (Mn--6891). Calvert Co.: Tidestrom 7797 (I). Carroll Co.: M. J. Fisher 121 (Up); A. R. Moldenke 495 (Fg). Dorchester Co.: C. P. Smith 2936 (I). Howard Co.: Arsène 724 (Or--14678); A. R. Moldenke 494 (Fg). Kent Co.: H. N. Moldenke 13869 (Z). Montgomery Co.: Ewan 17144 (Tl, Tl). Prince Georges Co.: Hyacinth 1644 (Or--14730); A. R. Moldenke 493 (Fg); Petrak s.n. [6.VIII.1950] (S); Tidestrom 14482 (I); True 564 (Up). Talbot Co.: E. C. Earle 1734 (Up). Washington Co.: A. R. Moldenke 39 [H. N. Moldenke 21760] (Bm). Worcester Co.: C. E. Moldenke s.n. [H. N. Moldenke 6638] (N). DISTRICT OF COLUMBIA: F. Blanchard s.n. [Sept. 20, 1890] (Dt), s.n. [near Long Bridge, 11 July 1891] (N); Boettcher 226 (Ca--162475); J. H. Holmes s.n. [1888] (Ka); Lenander s.n. [Washington, Juli 27, 1933] (S); W. H. Seaman s.n. (Mm--15404); E. S. Steele s.n. [July 7, 1896] (Ob--50850). VIRGINIA: Albemarle Co.: H. N. Moldenke 19225 (N, Si). Augusta Co.: Murrill s.n. [12 July 1895] (N). Bedford Co.: Curtiss s.n. [August 3, 1872] (S). Botetourt Co.: A. R. Moldenke 65 [H. N. Moldenke 21790] (Bm, Gg). Craig Co.: J. M. Fogg 13149 (Up). Fairfax Co.: J. J. Carter s.n. [Falls Church, July 1876] (Tl); A. R. Moldenke 497 (Fg). Fauquier Co.: A. R. Moldenke 66 [H. N. Moldenke 21791] (Bm). Giles Co.: J. M. Fogg 12772 (Up), 14787 (Up). Gloucester Co.: A. R. Moldenke 488 (Fg). James City Co.: Artz 1161 (We, We). King William Co.: A. R. Moldenke 487 (Fg). Loudoun Co.: A. R. Moldenke 67 [H. N. Moldenke 21792] (Bm, Gg). Montgomery Co.: R. Kral 11160 (Hi—215372). Nor-

folk Co.: A. R. Moldenke 474 (Fg, S). Northumberland Co.: A. R. Moldenke 486 (Fg). Orange Co.: Nason s.n. [Gordonsville, July 1867] (Ur). Prince William Co.: A. R. Moldenke 496 (Fg). Pulaski Co.: A. R. Moldenke 61 [H. N. Moldenke 21786] (Bm). Roanoke Co.: A. R. Moldenke 63 [H. N. Moldenke 21788] (Bm); C. E. Wood 3284 (Ca--772814), 6248 (Hi--51276). Rockbridge Co.: A. R. Moldenke 64 [H. N. Moldenke 21789] (Bm). Rockingham Co.: H. N. Moldenke 19226 (N). Smyth Co.: A. R. Moldenke 59 [H. N. Moldenke 21784] (Bm); J. K. Small s.n. [Marion, July 20, 1892] (Ba, Ob--50846, We). Washington Co.: A. R. Moldenke 57 [H. N. Moldenke 21782] (Bm, Gg). Alexandria: A. R. Moldenke 498 (Fg). County undetermined: Herb. Mus. Bot. Stockholm s.n. (S); Herb. Retzius s.n. (Lu). WEST VIRGINIA: Braxton Co.: R. Harris s.n. [August 4, 1933] (We). Brooke Co.: E. A. Bartholomew B.1937-11 (We). Calhoun Co.: R. Harris 106 (We), s.n. [June 26, 1933] (We). Gilmer Co.: G. B. Rossbach s.n. [10/12/52] (We). Greenbrier Co.: E. E. Smith s.n. [August 3, 1947] (We). Harrison Co.: Judy s.n. [summer 1934] (We). Jackson Co.: West Va. Bot. Exped. s.n. [June 25, 1930] (Bt-25425). Jefferson Co.: A. R. Moldenke 41 [H. N. Moldenke 21763] (Bm). Kanawha Co.: Greenlee s.n. [Aug. 12, 1934] (We); F. C. Randolph 227 (We). Lewis Co.: Mrs. V. Arnold s.n. [July 18, 1954] (We). Marion Co.: Herb. West Va. Univ. s.n. (We); A. Vincent s.n. [Valley Falls, June 27, 1957] (We). Marshall Co.: E. A. Bartholomew M.285 (We). Mineral Co.: M. Brown s.n. [August 23, '50] (We). Monongalia Co.: Anderson & Smith 360 (We); Sheldon s.n. [State Farm, 7/28/14] (We), s.n. [State Farm] (We). Ohio Co.: E. Drummond s.n. [October 1937] (Cm); Strausbaugh 344 (We). Pendleton Co.: R. B. Clarkson 1395 (We); E. L. Core 3188 (Ob--50851), 6131 (We); Netting 117 (Cm). Preston Co.: J. Myers s.n. [July 26, 1937] (We). Randolph Co.: E. L. Core 6241 (We). Roane Co.: E. A. Bartholomew Ro-20 (We). Taylor Co.: Constable s.n. [Dry Run, 7/21/59] (We). Tucker Co.: A. H. Moore 2110 (Ca--159478, Gg--31436). Tyler Co.: Bartholomew & Wilson T.275 (We). Upshur Co.: Grose & Grose s.n. [Sago, August 20, 1946] (We); W. M. Pollock s.n. [July 13, 1895] (W--261415). Wayne Co.: Lycan 72 (We). Wirt Co.: E. A. Bartholomew 73 (We), 1935-73, in part (We), s.n. [Aug. 28, 1932] (We), s.n. [6/9/33] (We), s.n. [June 20, 1934] (We). Wyoming Co.: West Va. Biol. Exped. s.n. [July 9, 1929] (H--26357). NORTH CAROLINA: Alamance Co.: Ahles & Bell 16843 (Hi--92729, Hi--92730). Anson Co.: Ahles & Leisner 19495 (Hi--92731, Hi--92732). Avery Co.: Britton & Britton s.n. [Cranberry Station, Sept. 13, 1885] (C). Bertie Co.: Ahles & Duke 46167 (Hi--121523, Hi--121524); D. S. Correll 1987 (H--40245, N). Burke Co.: D. S. Cor-

rell 3088 (H--40284). Cabarrus Co.: Ahles & Leisner 19711 (Hi--92735). Camden Co.: D. S. Correll 2212 (H--9109); A. R. Moldenke 473 (Fg, S). Caswell Co.: C. R. Bell s.n. [July 29, 1958] (Hi--121522); Oosting 33399 (H--18205). Catawba Co.: C. R. Bell s.n. [Sept. 8, 1958] (Hi--146191). Chatham Co.: Houck 309 (Hi--90514, Hi--92888). Cherokee Co.: D. S. Correll 3559 (H--40251). Chowan Co.: Ahles & Duke 47960 (Hi--104429). Cleveland Co.: Ahles & Leisner 19143 (Hi--92734). Davie Co.: D. S. Correll 2739 (H--40248); A. E. Radford 14848 (Hi--92889). Edgecombe Co.: D. S. Correll 2440 (H--40240). Forsyth Co.: Ahles & Duke 49010 (Hi--111296); D. S. Correll 2592 (H--19847); P. O. Schallert s.n. [7/1/33] (Du--236986). Gates Co.: Ahles & Duke 44554 (Hi--110654). Granville Co.: Buell 1438 (No--8602, W--1654110). Greene Co.: D. S. Correll 1368 (H--40252). Guilford Co.: Melvin s.n. [Aug. 1955] (Hi--92891). Halifax Co.: Ahles & Leisner 17005 (Hi--92892). Haywood Co.: Ahles & Duke 50251 (Hi--112965); R. A. McLean 98 (We); A. R. Moldenke 51 [H. N. Moldenke 21775] (Bm); Oosting 34401 (Ob--70422); Smathers 57 (N). Henderson Co.: Memminger s.n. [July 30, 1885] (Hi--49537); Oosting 35487 (H--31533). Iredell Co.: C. F. Hyams s.n. [Statesville] (Vt). Jackson Co.: C. W. Galloway 3101 (Hi--92738). Lee Co.: Houck 387 (Hi--92393). Madison Co.: Ahles & Duke 46352 (Hi--121525). Martin Co.: A. E. Radford 39443 (Hi--110655). McDowell Co.: C. R. Bell 4505 (Hi--92894). Mecklenburg Co.: Ahles & Duke 48501 (Hi--112968, Hi--112969, Hi--112970); D. S. Correll 3030 (H--9082). Mitchell Co.: Ahles & Duke 47078 (Hi--104474). Montgomery Co.: Ahles & Leisner 16305 (Hi--92741). Orange Co.: Blomquist 4713 (H--20439); W. C. Coker s.n. [Sept. 19, '09] (Hi--59477); Radford & Stewart 199a (Hi--12595). Pasquotank Co.: Ahles & Duke 48075 (Hi--104472). Person Co.: Duke 351 (Hi--92742). Polk Co.: D. S. Correll 3243 (H--40239); Peattie 611 1/2 (Hi--59480); E. C. Townsend s.n. [7.20,1899] (Se--14945). Randolph Co.: Millsaps s.n. [Aug. 13, 1932] (Hi--3256). Richmond Co.: A. E. Radford 14475 (Hi--92897). Rockingham Co.: A. E. Radford 13604 (Hi--92899). Rowan Co.: D. S. Correll 2801 (H--40247); A. E. Radford 14288 (Hi--92898). Stanly Co.: Ahles & Leisner 19855 (Hi--92745, Hi--92746). Surry Co.: A. E. Radford 18377 (Hi--92900). Swain Co.: A. R. Moldenke 52 [H. N. Moldenke 21776] (Bm). Transylvania Co.: D. S. Correll 3398 (H--40249). Tyrrell Co.: A. E. Radford 39167 (Hi--104467). Union Co.: Ahles 34050 (St); Ahles & Haesloop 31462 (Hi--104465). Vance Co.: Ahles & Leisner 17215 (Hi--92748). Wake Co.: Brimley 78 (No--8601). Watauga Co.: Ahles & Duke 47718 (Hi--104463). Wilson Co.: A. E. Radford 38065 (Hi--104462). Yadkin Co.: A. E. Radford 15388 (Hi--92803). County undetermined: Ashe s.

n. [July 19] (Hi--59484). SOUTH CAROLINA: Abbeville Co.: A. E. Radford 25919 (Hi—92728). Anderson Co.: J. Davis s.n. [Anderson, 8-7-19] (Au); A. E. Radford 14027 (Hi--92886). Cherokee Co.: Ahles & Haesloop 31004 (Hi--104427). Greenwood Co.: A. E. Radford 26647 (Hi--92737). Lexington Co.: A. E. Radford 27036 (Hi--92739). Marlboro Co.: A. E. Radford 15516 (Hi--92895). Union Co.: Ahles & Haesloop 31462 (Hi--104466). York Co.: Ahles & Haesloop 31144 (Hi--104458, Hi--104459). Witherspoon Island [Darlington Co.]: B. E. Smith 1007 (Hi--26475). GEORGIA: Bartow Co.: W. H. Duncan 8535 (Gu--30152). Clarke Co.: Drury s.n. [June 3, 1929] (Gu—U.6650); Holder E.8338 (Gu), s.n. [Athens, July 7, 1929] (Up); Miller & Maguire 1261 (Ua--16576), 1263 (Ba); Pyron s.n. [Athens, July 12, 1929] (H—5482). Richmond Co.: Cuthbert s.n. [Augusta, July 25, 1900] (Fl--21129). Thomas Co.: Mrs. A. P. Taylor s.n. [Thomasville, July 28, '03] (Rf), s.n. [Thomasville, Sept. 1903] (Rf). FLORIDA: Manatee Co.: S. M. Tracy 6652 (W--383904). Pasco Co.: C. Jackson 626 (Rf). ALABAMA: Baldwin Co.: S. M. Tracy 8037 (Au, N, N, Tr, Tr, Tr, Up—50918, W--513695). DeKalb Co.: Moldenke & Woods 502 (S). MISSISSIPPI: Claiborne Co.: Moldenke & Woods 526 (S). Leflore Co.: Moldenke & Woods 511 (S). Smith Co.: S. M. Tracy s.n. [Taylorville, 3/21/1903] (W—510727), s.n. [Taylorville, 8/21/1903] (N). Sunflower Co.: Moldenke & Woods 510 (S). Tallahatchie Co.: Moldenke & Woods 506 (B, S). Warren Co.: Demaree 25493 (Sm). Yazoo Co.: Moldenke & Woods 516 (S). OHIO: Belmont Co.: Guttenberg 251 (Cm). Butler Co.: M. Miller s.n. [July 7, 1932] (Ob--80602); Wehmeyer & Waters 111 (Mi). Champaign Co.: Demaree 11704 (Bt--30394, Ca--591979, Du--240704, N, W--1632196); Jewett s.n. [Urbana, July 28, 1838] (Mi); E. C.Leonard 1608 [Herb. Leonard 4352] (W--2161287); A. R. Moldenke 797 (Lw). Clark Co.: F. P. Davidson s.n. [Springfield, July 1885] (Or—8872). Coshocton Co.: Madison s.n. (Co--109); H. N. Moldenke 12095 (Co--394). Darke Co.: A. R. Moldenke 800 (Lw). Delaware Co.: R. Crane 2444 (N), 2506 (N). Erie Co.: C. L. Booth s.n. [August 2, 1901] (Ob--75335). Hamilton Co.: Aiken 10693 (Ll), s.n. [VII-17-1905] (Po—267664); E. L. Braun s.n. [July 24, 1917] (Cn); R. Buchanan s.n. (Ll); J. Clark s.n. [Cincinnati] (Bm, Bm); Frank s.n. [1837] (Br); C. G. Lloyd s.n. [Sedamsville, July 1875] (Cn), s.n. [July 24, 1882; Herb. Prager 18635] (Gg—31434), s.n. [July 31, 1882] (Mi), s.n. [Cincinnati, July 25, 1883] (Ca--192071, Go); M. Mohr 466 (Ll). Harrison Co.: A. R. Moldenke 788 (Lw, Ut). Holmes Co.: H. N. Moldenke 12104 (Co—401). Knox Co.: A. R. Moldenke 791 (Lw). Lake Co.: H. C. Beardslee s.n. [Aug. 3, 1925] (Ob—97296), s.n. [Madison] (Ob--97295). Licking Co.: H. L. Jones s.n. [Aug. 4, 1889] (Ob--80603). Lorain Co.: M. E. Day 221 (Ob--99797); Dick

s.n. [Oberlin, July 27, 1894] (Mn--18492); F. E. Leonard 86/8 (Ob--75341), s.n. [July 20, 1896] (Um--184); E. W. Phillips s.n. [Rochester, 8/8/1892] (Cm); A. E. Ricksecker s.n. [Elyria, Aug. 1, '94] (W--217441); A. A. Wright s.n. [July 30, 1889] (Ob--75342, Ob--75343), s.n. [Aug. 1, 1889] (Ob--75344). Lucas Co.: Sanford 1957 (S). Meigs Co.: C. H. Jones s.n. [July 10, 1935] (N). Miami Co.: Clevenger s.n. [Fletcher, Aug. 13, 1897] (W--1524139); A. R. Moldenke 799 (Lw). Montgomery Co.: H. P. Smith 1957 (Dt). Ottawa Co.: R. H. Moore s.n. [Oak Harbor, July 1927] (Ok--10355), s.n. [Oak Harbor, 1927] (Ok--10354). Richland Co.: E. Wilkinson 8467 (Cm, Ob--80604, Ob--80605), s.n. [Aug. 1888] (Ob--80606). Ross Co.: Crowl 556 (N). Scioto Co.: Demaree 11518 (Ca--592048). Tuscarawas Co.: T. S. Hopkins s.n. [Dundee, Aug. 1911] (Cm, Cm). Union Co.: A. R. Moldenke 793 (Lw, Ut). Warren Co.: F. A. Bennett s.n. [July 16, 1884] (Cm). Wayne Co.: L. S. Hopkins s.n. [6/25/11] (Br), s.n. [7/3/11] (Br); Thorne s.n. [Wooster, Aug. 17/97] (Fc). ILLINOIS: Adams Co.: Brinker 2717 (Il--15819, Ur), 3489 (Il--15814), 3512 (Il--15813, Ur); Evers, Jones, & Jones 692 (N, Ur); A. B. Seymour s.n. [Camp Point, 19 Aug. 1876] (H--106461). Brown Co.: V. H. Chase 12760 (Ur, Ur, Ur, Ur). Cass Co.: Ahles 2940 (Ur). Champaign Co.: Evers 1484 (Ur); Fink s.n. [Champaign, Aug. 16, 1892] (Io--28700); G. N. Jones 12439 (Ur), 12647 (Ur), 12829 (Ur), 14059 (Ur), 16528 (Ur), 17554 (Ur); McDougall 95 (Ur); Snyder s.n. [Urbana, July 1881] (Sd--4250). Christian Co.: DeMott s.n. [Taylorville, 8/4/96] (Ur). Clark Co.: G. D. Fuller 10978 (Il--19301). Coles Co.: V. A. Anderson 12595 (Il--20714); G. D. Fuller 10700 (Il--21849). Cook Co.: H. H. Babcock 9282 (Bz--23793), s.n. [Jul. 13, 1814] (Sg--16116); Bakker s.n. [Gardner's Park, Sept. 1912] (Sd--12804); R. Bebb 2107 (Ok); H. R. Bennett s.n. [August 17, 1957] (Go), s.n. [August 31, 1957] (Go); Blatchford 2515, in part (Il--15820); M. A. Chase s.n. [July 26, 1895] (Ur), s.n. [Bowmanville, July 7, 1896] (Ur, Ur); Fuller & Link 182 (Il--15833); Lansing 1441 (Ur), 2806 (Ur); W. S. Moffatt 575 (Se--95719); Umbach 1303 (Ca--441515). Crawford Co.: Ahles 4939 (Ur). Cumberland Co.: Ahles 2574 (Ur); Winterringer 6071 (Il--33426). DeKalb Co.: P. B. Whitford s.n. [July 19, 1946] (Ur). Douglas Co.: Winterringer 608 (Ur). Du Page Co.: G. D. Fuller 1355 (Il--15832); W. S. Moffatt 293 (Ur), 575 (Ur); Umbach s.n. [Naperville, July 22, 1898] (W--339481). Edgar Co.: A. R. Moldenke 809 (Lw). Effingham Co.: Ahles 2623 (Ur). Fayette Co.: O'Dell 337 (Ur). Hancock Co.: F. C. Gates 9948 (Ur). Iroquois Co.: Ahles 3211 (Ur); Winterringer 6538 (Il--34122). Jackson Co.: Fuller & Welch 295 (Il--15842). Jefferson Co.: Ahles 5468 (Ur); Winterringer 7803 (Il--37756). Jo Daviess Co.: Ahles 4344 (Ur); Winterringer 8157 (Il--37457). Kanka-